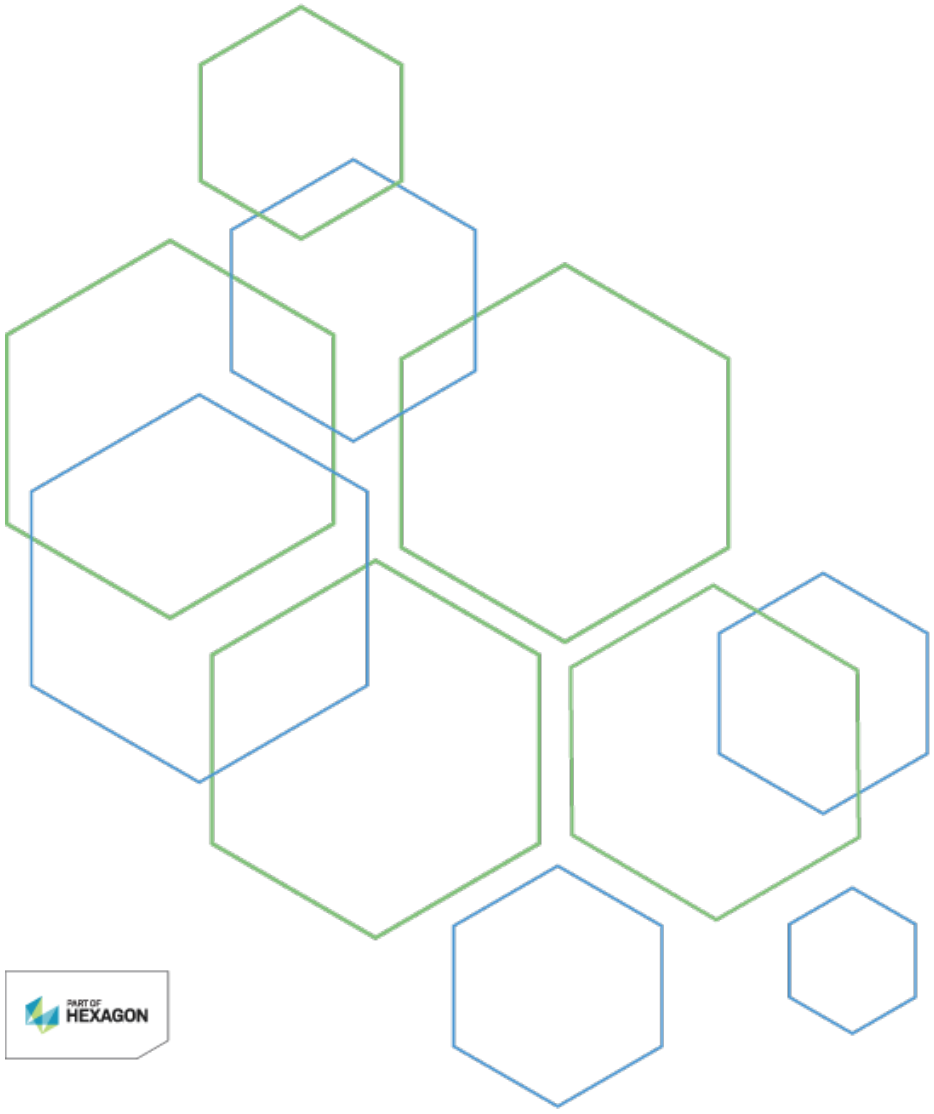
INTERGRAPH Smart 3D

Export PDS to Smart 3D

User's Guide



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Contents

Preface

This document describes how to integrate Plant Design System (PDS®) with Intergraph Smart™ 3D. This document pulls together information from several other Smart 3D administrative and user documentation guides. The content includes a list of referencing PDS projects, exporting data from PDS and importing data into Smart 3D, and other administrative tasks.

Documentation Comments

For the latest support information for this product, comments or suggestions about this documentation, and documentation updates for supported software versions, please visit *Intergraph Smart Support* (*https://smartsupport.intergraph.com*).

What's New with Plant Design System (PDS) Integration

The following changes have been made to the PDS® integration with Smart 3D guide.

Version 2016 (11.0)

- Formerly known as SmartPlant 3D (SP3D) and SmartMarine 3D (SM3D), the products are now integrated and rebranded as Smart 3D (S3D). Replaced all instances of SP3D and SM3D with S3D in this user's guide. (P1 CP:273062)
- Information related to PDS Model Reference has been removed. (P2 CP:276780)
- Added information about importing PDS parametrics as Catalog Equipment, as well as information on importing sloped piping. For more information, see *Import Equipment* (on page 33) and *Import Sloped Piping* (on page 36). (P4 CP:231646, CP:231646)
- Added note that if you do not map an **XML Spec** for the **CableTraySpec**, **ConduitSpec**, and **HVACSpec** sheets, then the PDS software pulls an **XML Spec** from Smart 3D. For more information, see *CableTraySpec* (on page 73), *ConduitSpec* (on page 73), and *HVACSpec* (on page 85). (P4 CP:251245)
- Added new section describing the **PMC-Map** sheet. For more information, see *PMC-Map* (on page 87). (P4 CP:251245)
- When you export raceway model data to an XML file, you must specify an export list file document that contains the complete file paths to the DGN files. If the list file does not contain the complete file paths, the process fails. For more information, see *Export Raceway Model Data to an XML File* (on page 24). (P3 CP:271729)
- Updated information on **PDS Import** and **Import XMpLant Data**. For more information, see *PDS Import* (on page 31) and *Import XMpLant Data* (on page 38). (P2 CP:251249)

SECTION 1

PDS Plant Design System

PDS® Plant Design System is a comprehensive, intelligent computer-aided design/engineering (CAD/CAE) application for plant design, construction, and operations. The market's leading solution for plant design and engineering, PDS fits into corporate computing strategies - on a global scale and at the project level, with projects ranging from small plant revamps to multibillion-dollar offshore platform construction.

Intergraph has a well-established track record of providing migration paths to our newest technologies. This document provides the information needed to migrate PDS to Smart 3D - helping you make the most of your investment.

For more information or help with migration from PDS to Smart 3D, please contact your local Intergraph representative or visit our Web site at *ppm.intergraph.com* (*http://ppm.intergraph.com*).

IMPORTANT Only PDS Version 8.0, or later, is supported by Smart 3D.

Specifications and Other RDB Information Translation

The capability to translate piping specifications from PDS to Smart 3D is available and has been successfully applied to hundreds of piping specifications. You can migrate other RDB information, such as raceway, HVAC, and custom piping parts and parametric equipment, as well as naming rules to replace PDS labels. If you want to migrate your customized PDS RDB information to Smart 3D, we can provide piping specification migration training if you want to carry out the migration internally, or you can have Intergraph turnkey this process since it is typically a one-time effort. For more information about doing it yourself, see *Using the PDS Translator* (on page 52).

Projects/Model Translation

Smart 3D supports the translation of objects and models from PDS. Specifications for any special components need to be defined in Smart 3D first before you can translate the special components from PDS. Intergraph consulting services are recommended for project and model translation to prepare data maps and PDS 3D data, import to Smart 3D, and validate and make any needed corrections and/or changes. Project/model translation tools require a separate license unless used in conjunction with Intergraph services. For more information, see *Exporting Data from PDS* (on page 14).

Intergraph – Your Migration Partner

To help make your migration from PDS to Smart 3D a seamless one, while at the same time allowing you to move at your own pace, Intergraph offers migration consulting services to support the entire process. With a 35-year tradition of innovation and customer commitment, Intergraph has the expertise and experience needed to help you make a painless transition from PDS to Smart 3D. Uniquely combining the principles of data centricity, integration, and automation of best practices, our solutions deliver high value with an economical, quickly returned start-up investment. Contact us today at *ppm.intergraph.com* (*http://ppm.intergraph.com*) and let us help you with your unique migration needs.

See Also
Using the PDS Translator (on page 52)
Exporting Data from PDS (on page 14)

Limitations

Limitations when Exporting from PDS

- FrameWorks Plus does not write tapered member, arc members, or generic solid members (created using the **Place Solid Element** command, which creates a FrameWorks Plus solid element from a MicroStation solid element or from two MicroStation 2D elements) to the CIS/2 file.
- You cannot export grids from FrameWorks Plus.
- The **PDS Model Data Exporter** is not used to export Structure data from FrameWorks Plus. You must use the CIS/2 translator for FrameWorks Plus that is delivered with FrameWorks Plus, which is leased separately from Smart 3D.
- You cannot export ladders, stairs, handrails, or platforms from PDS.
- You must have FrameWorks Plus and PD_Shell installed on the computer where you install the translator.
- The **PDS Export Tools** component is a separately licensed product. Before attempting to install the component, please contact *Intergraph Support* (*http://www.intergraph.com/support*) for licensing information.
- You can use the **PDS Model Data Exporter** with PDS version 8.0 or higher. If the PDS project is an earlier version, you need to upgrade the project before using the utility to export data.
- There is no drawing conversion available.

Limitations when Importing PDS Data

- You should import Electrical Equipment using **File > Import > Equipment** command.
- You will need to reestablish piping connectivity as it is not maintained across XML files. If you want to maintain connectivity, export all model to a single XML file at one time.
- DVCS data is not imported.
- PDS plant monuments placed far away from the global origin will cause errors when you try to import.
- Attached MicroStation graphics in PDS import as unintelligent, non-editable objects in Smart 3D. Similarly, equipment with attached MicroStation graphics import as non-editable objects.
- Equipment that was rotated and mirrored in PDS may not import in the original orientation.
- Piping commodity override and piping commodity synonym items may not import correctly.
- Piping taps and trunnions may require remodeling.
- Because Raceway specifications are sized based in PDS but are not sized based in Smart 3D, you may have to re-assign the specifications after import.
- The software will not graphically import EDEN-based or Pelican Forge- based supports. You can import designed support locations only.

- Imported structural members are standard Smart 3D members. However, there are no frame connections, assembly connections, or relationships defined for any of the members on import. In addition, there is no data management of the imported members (the CIS/2 model can be imported multiple times without recognition of a prior import resulting in members being placed on top of the previous import).
- You must create a mapping file using the **File > New Mapping File Command** before you can use that mapping file when importing a structural model.
- The mapping file created by the software is a template. The software does not write known-to-be-different section names to the mapping file. You are responsible for verifying, editing, updating, and maintaining the third-party application section names in the file.
- Non-circular holes from FrameWorks Plus may not import correctly.
- If you edited the global origin in FrameWorks Plus, objects will not import to the correct location and will have to be moved to the correct location in Smart 3D.

Limitations for the Pipe Branch Cleanup Utility

- The utility does not remove duplicate records from the branch tables.
- The **Pipe Branch** and **Pipe Nominal Diameters** sheets must exist in separate workbooks. One way to set this up is to open the piping specification workbook, and cut and paste the **Pipe Nominal Diameters** sheet into another workbook. The specification workbook has the branch sheet in it. After the process is over, copy the nominal diameters sheet back into the specification workbook.
- Before running the Pipe Branch Cleanup utility, you must convert at least one PDS specification using the PDS translator. The conversion results in one specification workbook and one catalog workbook per spec.
- The Workstation setup includes the PDSTranslator folder only if you have specified the Project Management option during installation.
- The process overwrites the Excel Pipe Branch workbook.
- The process does not mark any records in the workbook as changed.

Limitations for the Piping Commodity Filter Cleanup Utility

- The **Piping Nominal Diameters** sheet and the **Piping Commodity Filter** (PCF) sheet must be in the workbook specified for processing.
- The utility does not merge multi-size items, such as reducers and reducing tees, unless all the records in the first size and second size match.
- The utility may change the formatting of some merged cells. If you require specific formatting, it may be necessary to apply the desired formats to modified cells after the cleanup is completed.
- Before running the Piping Commodity Filter Cleanup utility, you must convert at least one PDS specification using the PDS translator. The conversion results in one specification workbook and one catalog workbook per spec. The specification workbook contains the piping commodity filter and piping nominal diameter information.
- The process overwrites the Excel workbook.
- The process does not mark any records in the workbook as changed.

Limitations for the Piping Reference Data Merge Utility

- The utility does not support the merging of specification workbooks.
- The utility can merge as many catalog (part) workbooks as required, and reports the results in a log file.
- Before running the Piping Reference Data Merge utility, you must convert at least two PDS specifications using the PDS translator. The conversion results in one specification workbook and one catalog workbook per spec. The Piping Reference Data Merge utility merges catalog (part) workbooks.
- The output workbook includes a **Sheet1** worksheet. You can remove this sheet and save the workbook before bulk loading. Not removing it does not impact the load, although a message is printed in the log file.
- Worksheets unique to a specific source workbook are copied to the new output workbook.
- In the case of worksheets that are common to all input workbooks, if data is duplicated, then the data from the first worksheet is taken. The utility ignores duplicate data from the subsequent common worksheets.

Limitations when using the UoM Conversion Utility

- Before running the UoM Conversion utility, you must convert at least one PDS specification using the PDS translator. The conversion results in one specification workbook and one catalog workbook per spec.
- The utility does not convert metric files to imperial equivalents, unless you revise the delivered NPD Equivalence Rule workbook so that it has metric units as the primary units of measure and the equivalent imperial units of measure as the secondary units of measure.
- The utility only converts dimensional parameters. It does not convert weights, densities, or any other unit-based properties in the workbooks. Also, part schedule thickness and generic data are not converted.
- All data in the part classes must be in the same units. For example, all parts must be in inches or in mm.
- Running the conversion twice ruins the data. The translator maps sizes regardless of the units or changes due to any prior conversion.
- If you have input data in more than one workbook, you can merge the data into one workbook using the Piping Reference Data Merge utility. The UoM Conversion utility must have the input data in one workbook.
- The Workstation setup includes the PDSTranslator folder only if you have specified the Project Management option during installation.
- A default NPD Equivalence Rule workbook is delivered in the *[Product Folder]*\Core\Shared\UOMServices\xls folder. This file helps convert units from imperial (inches) to metric (mm).
- You must remove the Read-only property on the NPD Equivalence Rule workbook before running the conversion process.

Limitations when Distributing Symbols

- Because of Microsoft operating system requirements, the user on the client computer must have Power User or Administrator access to the computer. If you do not allow users to have

Power User or Administrator access to the client computer, then you must distribute symbols manually. For more information, see Distributing Symbols Manually.

- If the symbol being distributed is an existing symbol that has been modified, the major version number in the Visual Basic project properties must be increased by 1. Increasing the major version number by 1 forces the re-computation of existing symbol occurrences when the **Synchronize Model With Catalog** command in Project Management is run. If an existing symbol is modified and distributed, all the new symbol occurrences will use the new symbol (unless the new occurrence uses an existing entry of symbol's cache). If an existing symbol is modified and distributed, and an existing occurrence is recomputed, it will use the new symbol if the re-computation results in creation of new entry in the symbol's cache.

Limitations when using the OD to NPD Utility

- Before running the OD to NPD utility, you must convert at least one PDS specification using the PDS translator. The conversion results in one specification workbook and one catalog workbook per spec.

Limitation when using the PDS Translator

- The PDS translation process requires the specification writer to make some manual edits to complete the conversion.
- You may need to run the translation step a number of times.
- If the PDS translator encounters two through-bolted fittings requiring a complete substitution of cap screws; and both through-bolted fittings have identical bolted ends in terms of end preparation, pressure rating, and end standard; and the two through-bolted fittings imply different cap screw commodity codes in PDS, only one cap screw record will be created in the Bolt Selection Filter. The PDS Translator will arbitrarily choose one of the two cap screw commodity codes, and the specification writer must manually add the second cap screw by use of the bolt option.
- If the PDS translator encounters a through-bolted fitting requiring a complete substitution of cap screws; and the through-bolted fitting implies two different cap screw commodity codes in PDS based on two different size ranges, only one cap screw record will be created in the Bolt Selection Filter. The PDS Translator will arbitrarily choose one of the two cap screw commodity codes, and the specification writer must manually add the second cap screw by use of a different size range.
- For the CL51 through CL56 rating items, the rating must be changed to a schedule/thickness value.
- For reinforcing pads using a geometry standard of 6 (or other), the value can be removed from the **PipingCommodityMatlControlData** worksheet in column P. This record is not required for Smart 3D.
- Items using any user-defined or customized geometry standards require that the values are added to the **AllCodelists** workbook.
- The size-dependent commodity codes flag refers only to the PCD format, and not to the Project Administrator option in PDS. Set this option to YES only if you have ALL individual NPD values in the PCD (for example, when you have all NPD values for piping commodities from 2" to 6"). The software includes a worksheet for size-dependent codes from pdtable_212. You must enter sizedep.txt (or other file name) on the **File Names** worksheet in the appropriate option row. This file is a report of size-dependent commodity codes.

- The translation process does not convert PDS codelists.
- The process uses two Smart 3D codelists that relate to dimensional data. The delivered codelist file for Smart 3D is **AllCodeLists.xls**.

SECTION 2

Exporting Data from PDS

You can export Piping, HVAC, Electrical, Equipment, and FrameWorks Plus data from PDS that can then be imported into Smart 3D. The PDS Model Data Exporter, a utility delivered external to the product, exports Piping, HVAC, Electrical, and Equipment data. FrameWorks Plus uses its own export command to create CIS/2 files for data transfer. The PDS Model Data Exporter utility requires the separate lease and installation of the **Intergraph Smart™ 3D PDS Project Translators (SEBY801AA)**.

NOTES You can use the **PDS Model Data Exporter** with PDS version 8.0 or higher. If the PDS project is an earlier version, you need to upgrade the project before using the utility to export data.

The transfer of Piping, HVAC, Electrical, and Equipment PDS data is a multi-step operation:

1. Edit the configuration files to reflect the customizations you have made to PDS attributes. For more information about the configuration files, see *PDS Exporter Configuration Files* (on page 15).
2. Edit the mapping workbooks to reflect the customizations that you have made to the Smart 3D properties. For more information about the mapping workbooks, see *Appendix: Importer Workbooks* (on page 72).
3. The data must be exported from PDS to an XML formatted file for import into Smart 3D. The **PDS Model Data Exporter** is delivered with Smart 3D to create the necessary XML file for importing. Sample data files are delivered for all disciplines in the *[Product Folder]*\Translators\Samples. You can write third- party XML data files using the delivered sample files as an example. For more information on the **PDS Model Data Exporter**, see *PDS Model Data Exporter* (on page 19).
4. You import the XML file data using the appropriate **File > Import** command in Smart 3D.

See Also

Importing Data from PDS (on page 31)

Install PDS Export Tools

Installing the **PDS Export Tools** component further extends the PDS integration capabilities by allowing you to export Piping, HVAC, Electrical, Equipment, and Structure model data from PDS into Smart 3D.

Before installing the **PDS Export Tools** component, you must install the following prerequisite software on a computer on which the **Project Management** and **Server Connectivity** options are also installed:

- Intergraph Batch Services
- RIS_Share (RIS Shared Components)
- MicroStation 8
- SmartPlant License Manager

- PD_Shell (Plant Design System environment)

For more information about acquiring these components, please contact *Intergraph Support* (*http://www.intergraph.com/support*).

IMPORTANT The **PDS Export Tools** component is a separately licensed product. Before attempting to install the component, please contact *Intergraph Support* (*http://www.intergraph.com/support*) for licensing information.

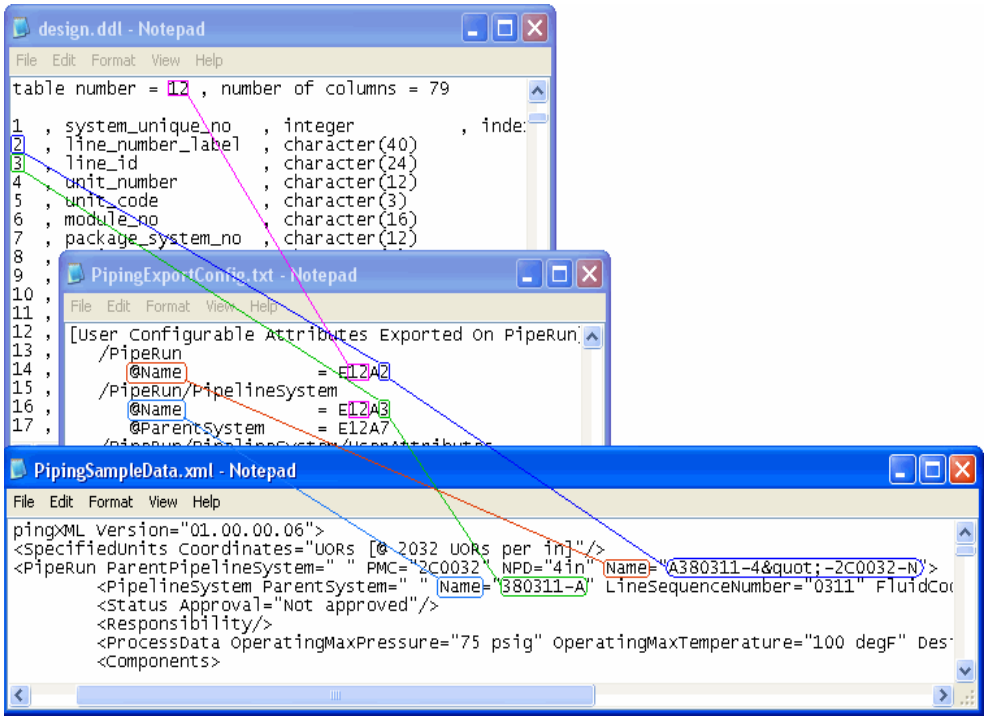
NOTE For more information about exporting PDS model data into the software, see the *Common User's Guide* available with the **Help > Printable Guides** command in the software.

PDS Exporter Configuration Files

The **PDS Model Data Exporter** utility uses configuration files delivered in the *..\PDShell\PDExportToSP3D\config* folder to map PDS electrical, equipment, HVAC, and piping attributes to XML attribute tags. You can use the delivered configuration files without editing if you have not customized any of the PDS "out-of-the-box" attributes. However, if you have customized PDS attributes, you must edit the configuration files to match your changes.

In addition, PDS does not have some attributes that are required for importing into Smart 3D. Examples include Insulation Material, Coatings, and Cleaning Responsibility. These attributes are given a hard coded text in the delivered configuration file and are marked with a comment "Not available in PDS." If you have added a user defined attribute to your PDS project to maintain any of these attributes, please change the configuration file accordingly to map those user attributes to the appropriate XML attributes.

The most common format in the configuration file to map the PDS attributes to the XML tags is the 'ExxAnn' notation, where 'xx' is the table number and 'nn' is the attribute number in the *..\PDShell\ddl\design.ddl*, *..\PDShell\ddl\eqp.ddl*, and the *..\PDShell\ddl\project.ddl* files.



Electrical Configuration File

The electrical configuration file is named *ElectricalExportConfig.txt*. This file maps XML attributes to EE Raceway attributes and to any user defined user attributes.

You can define attributes using one of three formats:

- @xmlAttribute = EErwayAttribute notation. For example, @spec = ee_spec_key.
- @xmlAttribute = "Some string" notation. This hard coded text is useful when attributes that are required to imported, but are not available in PDS (for example, Insulation Material or Insulation Temperature).

@xmlAttribute = 'ExxAnn' notation, where 'xx' is the table number and 'nn' is the attribute number in the ..\PDShell\ddl\project.ddl file. Use this option to map PDS project database attributes. This format is only available for PDS integrated raceway projects. The available table numbers are:

- 101 = Project Data Attribute
  111 = Discipline Data Attribute
  112 = Area Data Attribute
  113 = Model Data Attribute

Equipment Configuration File

The equipment configuration file is named *EquipmentExportConfig.txt*. This file defines:

- the user configurable equipment attributes on equipment.
- which datum point's origin and orientation should be used to export to the XML file as the parametric's origin and orientation.

To specify an attribute, you can define using:

- hard coded text such as "Required". This hard coded text is useful when attributes that are required to imported, but are not available in PDS (for example, Insulation Material or Insulation Temperature).

Using the 'ExxAnn' notation, where 'xx' is the table number and 'nn' is the attribute number in the ..\PDShell\ddl\eqp.ddl and the ..\PDShell\ddl\project.ddl files. The available table numbers are:

- 21 = Equipment
  22 = Nozzle
  101 = Project Data Attribute
  111 = Discipline Data Attribute
  112 = Area Data Attribute
  113 = Model Data Attribute Implicit entity relations can also be used. For example, using a E113A5 on an equipment item would get the model_no of the equipment model containing the equipment being exported. Similarly, using a E112A3 on an equipment's data would get the Area_no of the model containing the equipment being exported.

Importing and Placing G-Type Equipment

To import G-Type equipment (graphics only), add **@ImportAsGTypeShape = "true"**, as shown in the following example:

```
[User Configurable Attributes Exported On Equipment]
   /Equipment
     @Name              = E21A2
     @Description       = E21A3
     @ParentSystem      = E101A2
     @PartClass         = E21A12      ! Mapping to equip_division
     @PartNumber        = E21A5       ! Mapping to tutorial_no

   /Equipment/UserAttributes
!      SPECIFY YOUR USER DEFINED ATTRIBUTES HERE
       @Project = E101A3
       @Discipline = E111A2
       @Area = E112A3
       @Model = E113A5
       @ModelStatus = E113A17
       @ImportAsGTypeShape = "true"
```

G-Type equipment is placed in Smart 3D when the correct mapping between the XML and Smart 3D Catalog is not found and **@ImportAsGTypeShape = "true"** is defined in the XML. The G-Type equipment is placed in Smart 3D with a defined Aspect mapping.

The following is an example of a PDS Equipment model containing the parametric A031 (Side Ladder).

- Equipment Export exports this Equipment to XML as a 'Parametric' (corresponding to the A031 Parametric Attributes) + 'CustomShape' (corresponding to its Access Envelope) + 'CustomShape' (Corresponding to the actual A031 graphic).
- A031's Access Envelope has the primitive Category as "Access Hard" and hence, the corresponding XML custom shape's aspect is exported as "Access Hard".
- The second Custom Shape which actually represents the A031's graphic has its primitive category as 'Undefined' and hence it is exported as blank to the XML.
- The Equipment Export exports 'undefined' primitive categories as blank aspects to the XML and Equipment Import takes care of setting those blank aspects as Simple Physical.

The following are the primitive categories and their corresponding XML Aspects.

PDS Primitive Category XML Aspect
not defined blank
physical Simple Physical
maint_hard Maintenance Hard
maint_soft Maintenance Soft
access_hard Access Hard
access_soft Access Soft
safty_hard Safety Hard
safty_soft Safety Soft
const_hard Construction Hard
const_soft Construction Soft
hole Hole

Smart 3D has the following Aspects available that can be set on a Shape.

SimplePhysical
ReferenceGeometry
Operation

Maintenance
Insulation
DetailPhysical

You can map the XML aspects to these Smart 3D aspects using the **AspectMap** sheet in **Import Configuration**.

HVAC Configuration File

The HVAC configuration file is named *HVACExportConfig.txt*. This file maps XML attributes to HVAC attributes and to any user defined user attributes.

You can define attributes using two formats:

- @xmlAttribute = "Some string" notation. This hard coded text is useful when attributes that are required to imported, but are not available in PDS (for example, Insulation Material or Insulation Temperature).
- @xmlAttribute = 'ExxAnn' notation, where 'xx' is the HVAC table number and 'nn' is the attribute number in that table.

Piping Configuration File

The piping configuration file is named *PipingExportConfig.txt*. This file defines:

- the user configurable Piping Segment Attributes on: Piping System data, Pipeline System data, and Pipe Run data.
- the user configurable attributes on: components, pipes, and instruments.
- defines the user attributes to export on: pipe runs, components, pipes, and instruments.

To specify an attribute, you can define using:

- hard coded text such as "Required". This hard coded text is useful when attributes which are required to imported, but are not available in PDS (for example, Insulation Material, Steam Out Pressure, and Steam Out Requirement).
- Using the 'ExxAnn' notation, where 'xx' is the table number and 'nn' is the attribute number in the ..\PDShell\ddl\design.ddl and the ..\PDShell\ddl\project.ddl files. The available table numbers are:

12 = Piping Segment
34 = Piping Component
50 = Pipe
67 = Piping Instrument
101 = Project Data Attribute
111 = Discipline Data Attribute
112 = Area Data Attribute
113 = Model Data Attribute

Implicit entity relations can also be used. For example, using a E113A5 on a pipe run would get the model_no of the Piping Model containing the segment of the pipe run being exported. Similarly, using a E112A3 on a pipe's data would get the Area_no of the model containing the pipe being exported.

Port attributes are specified using the ExxPAnn notation, in which 'PA' means the Port Attribute. 'nn' is the serial number of the port attribute, which could be 1 to 14 for Components, 1 to 9 for Pipes, or 1 to 14 for Instruments.

PDS Model Data Exporter

Generates a discipline-specific XML data file that can be imported by the **File > Import** command in Smart 3D. You access this dialog by clicking **Start > All Programs > Intergraph Smart 3D > Translators > PDS Model Data Exporter**. You can use the **PDS Model Data Exporter** with PDS 2008 SE (9.0) or later. If the PDS project is an earlier version, you need to upgrade the project before using the utility to export data.

The **PDS Model Data Exporter** requires the separate lease and installation of the **Smart 3D PDS Project Translators (SEBY801AA)**. For more information, refer to the *Plant Design System (PDS) Guide* available from **Help > Printable Guides**.

The **PDS Model Data Exporter** is available for the following disciplines:

- **Piping** - In the Piping discipline, because you can have piping networks connected across models, a single XML file is specified for a set of model files being exported.
- **Equipment** - For the Equipment discipline, the PDS Model Data Exporter generates a single XML file per model. Therefore, you specify the folder where the XML files should be placed. The file names are named with the model name.
- **Electrical (Raceway)** - When you import the data in Smart 3D, you use the **Import Electrical** command to import the route data and the **Import Equipment** command to import the electrical equipment data. For the Raceway (Electrical) discipline, the PDS Model Data Exporter behaves much the same as with Equipment. However, two XML files are created, one for the route and one for the equipment. When you import the data in Smart 3D, you use the **Import Electrical** command to import the route data and the **Import Equipment** command to import the electrical equipment data.
- **HVAC** - For the HVAC discipline, the PDS Model Data Exporter does not have access to the HVAC_PROJ_NODE or HVAC_PROJ_PATH environment variables. Instead, the executable sets the HVAC_PROJ_PATH to the path of the default HVAC model location as obtained from **pdtable_115**. The executable requires that a *projlist.txt* file reside in the parent folder. For example, an HVAC project named *stdeng* is integrated with a PDS project as follows:

  ```
  PDS Project Location : PDSServer E:\stdeng\project.
  HVAC Models location : PDSServer E:\stdeng\models\hvac\stdeng.
  This information is in pdtable_115.
  ```

  In this configuration, the PDS Model Data Exporter sets the HVAC environment variables as follows:

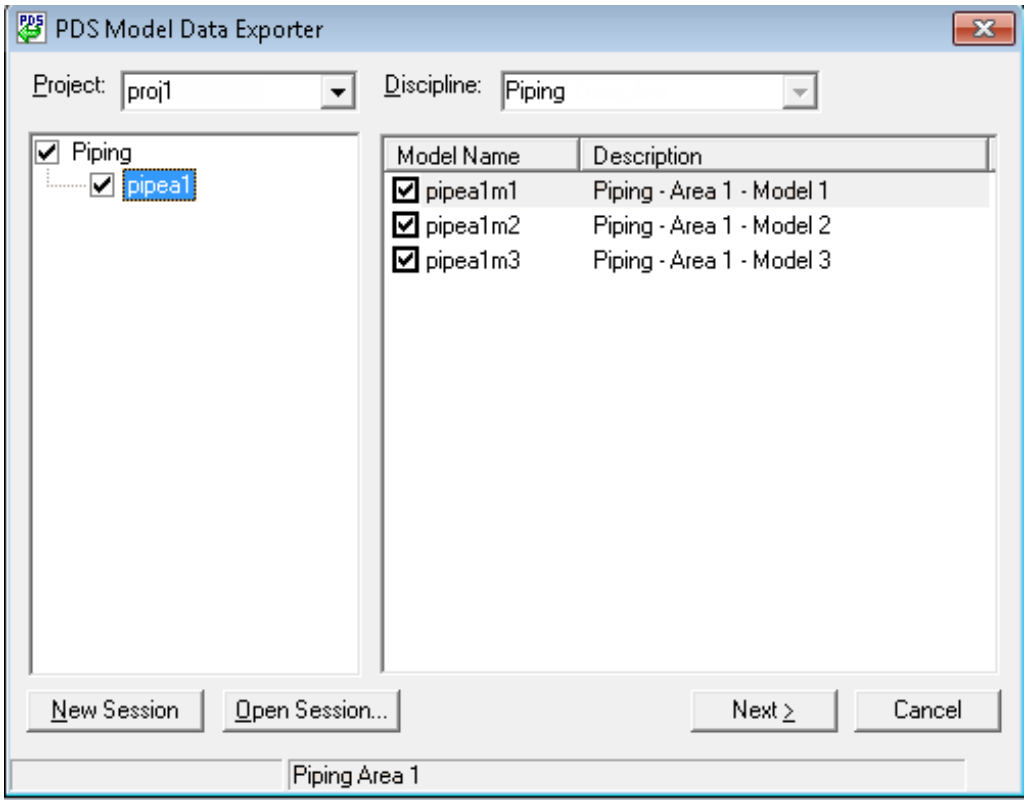
  ```
  HVAC_PROJ_NODE : PDSServer
  HVAC_PROJ_PATH : E:\stdeng\model\hvac
  ```

  The HVAC project list file named *projlist.txt* should be available in this folder for the export process to work.

  Because you can have HVAC networks connected across models, you specify a single XML file for a set of model files to be exported.

NOTE The **PDS Model Data Exporter** is not used to export Structure data from FrameWorks Plus. You must use the CIS/2 interface to move data from FrameWorks Plus to Smart 3D.

You can define export configuration files for each discipline. The configuration files include both user-configurable attributes and user attributes. Sample export configuration files are delivered with the PDExportToSP3D utility to be customized as needed.



Project

Specifies the PDS project to export. The drop-down provides a list of available PDS projects.

Discipline

Specifies the discipline to export. You can select: Pipeline, Raceway (Electrical), Equipment, and HVAC.

Area list

Displays a checkbox list of all the design areas in the selected discipline. You check the boxes within the list to select the models in those Areas that will be exported.

Model Name list

Shows a list of the models in the selected Areas.

New Session

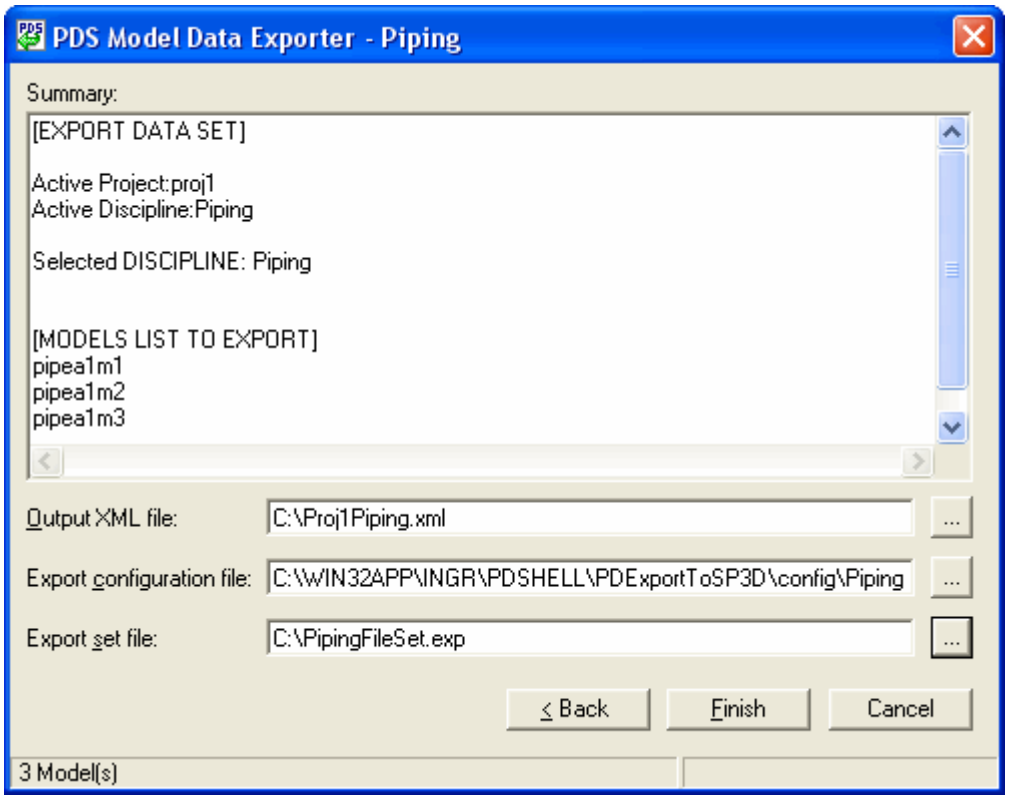
Resets the dialog box to start fresh from **Project** selection.

Open Session

Displays the **Select Export Set File** dialog from which to select a different PDS export set file *(.exp)*.

Next

Displays the next dialog box for exporting. This dialog shows a summary of the selected PDS project and models. You specify the output XML file/folder as applicable, the export configuration file, and the export set file entries.



Summary

Displays what you have selected to export.

Output XML file

Define the path and filename for the XML file to write. This is the XML file that Smart 3D uses to import the data.

Export configuration file

Specify the path and file name of the export configuration file to use. There are configuration files delivered in the \PDShell\PDExportToSP3D\config folder for the "out-of-the-box" PDS attributes. If you have added custom attributes to PDS, you need to edit the configuration files before you can use them. For more information about the export configuration files, see *PDS Exporter Configuration Files* (on page 15). For more information about the export configuration files, see the *Plant Design System (PDS) User's Guide.*

Export set file

Specify the path and file name for the export set file. This file is a settings file that you can use with the **Open Session** command in case you need to rerun the export process. The **PDS Model Data Exporter** also creates an export log file in the same folder as the Export Set file.

Finish

Exports the data to the specified XML file using the configuration file specified.

Topics

Export PDS Equipment Data to an XML File

1. Create the configuration file that you will use. There is a configuration file delivered in the ..\PDShell\PDExportToSP3D\config folder called *EquipmentExportConfig.txt* for the "out-of-the-box" PDS attributes. If you have added custom attributes to PDS, you will need to edit this configuration file before you can use it. For more information about the export configuration files, see *PDS Exporter Configuration Files* (on page 15).
2. Click **Start > All Programs > Intergraph Smart 3D > Translators > PDS Model Data Exporter**.

   The PDS Model Data Exporter dialog box appears.
3. Select a PDS project.
4. Select the Equipment discipline.
5. Select the Area(s)/model(s) that you want to export.
6. Click **Next** to verify the model information and preview the format of the XML file being created.
7. Select the **Output XML file/folder** as applicable.
8. Select the **Export configuration file** to use from step 1 above.
9. Provide a name for the **Export set file** and specify the file location.
10. Click **Finish**.

NOTE Equipment nozzles placed using datum points will export with the datum points intact now.

See Also

PDS Model Data Exporter (on page 19)

Export PDS HVAC Data to an XML File

1. Create the configuration file that you will use. There is a configuration file delivered in the ..\PDShell\PDExportToSP3D\config folder called *HVACExportConfig.txt* for the "out-of-the-box" PDS attributes. If you have added custom attributes to PDS, you will need to edit this configuration file before you can use it. For more information about the export configuration files, see *PDS Exporter Configuration Files* (on page 15).
2. Click **Start > All Programs > Intergraph Smart 3D > Translators > PDS Model Data Exporter**.

   The PDS Model Data Exporter dialog box appears.

3. Select a PDS project.
4. Select the HVAC discipline.
5. Select the Area(s)/model(s) that you want to export.
6. Click **Next** to verify the model information and preview the format of the XML file being created.
7. Select the **Output XML file/folder** as applicable.
8. Select the **Export configuration file** to use from step 1 above.
9. Provide a name for the **Export set file** and specify the file location.
10. Click **Finish**.

See Also

PDS Model Data Exporter (on page 19)

Export PDS Piping Data to an XML File

You can export different piping models to several different XML files. However, if you want the piping runs connected in the Smart 3D model, you need to export all connected piping models to a single XML file.

1. Create the configuration file that you will use. There is a configuration file delivered in the ..\PDShell\PDExportToSP3D\config folder called *PipingExportConfig.txt* for the "out-of-the-box" PDS attributes. If you have added custom attributes to PDS, you will need to edit this configuration file before you can use it. For more information about the export configuration files, see *PDS Exporter Configuration Files* (on page 15).
2. Click **Start > All Programs > Intergraph Smart 3D > Translators > PDS Model Data Exporter**.
3. Select a PDS project.
4. Select the Piping discipline.
5. Select the Area(s)/model(s) that you want to export. You should export everything that you want connected at the same time.
6. Click **Next** to verify the model information and preview the format of the XML file being created.
7. Select the **Output XML file/folder** as applicable.
8. Select the **Export configuration file** to use from step 1 above.
9. Provide a name for the **Export set file** and specify the file location.
10. Click **Finish**.

NOTE EndPrep and Pressure rating for tapped ports are now being exported.

See Also

PDS Model Data Exporter (on page 19)

Export PDS Raceway Data to an XML File

You can export different raceway models to several different XML files. However, if you want the raceway connected in the Smart 3D model, you need to export all connected raceway models to a single XML file.

1. Create the configuration file that you will use. There is a configuration file delivered in the ..\PDShell\PDExportToSP3D\config folder called *ElectricalExportConfig.txt* for the "out-of-the-box" PDS attributes. If you have added custom attributes to PDS, you will need to edit this configuration file before you can use it. For more information about the export configuration files, see *PDS Exporter Configuration Files* (on page 15).
2. Click **Start > All Programs > Intergraph Smart 3D > Translators > PDS Model Data Exporter**.
3. Select a PDS project.
4. Select the Raceway discipline.
5. Select the Area(s)/model(s) that you want to export. You should export everything that you want connected at the same time.
6. Click **Next** to verify the model information and preview the format of the XML file being created.
7. Select the **Output XML file/folder** as applicable.
8. Select the **Export configuration file** to use from step 1 above.
9. Provide a name for the **Export set file** and specify the file location.
10. Click **Finish**.

See Also

PDS Model Data Exporter (on page 19)

Export Raceway Model Data to an XML File

Independent EE Raceway Projects that are not integrated in PDS can be exported using a separate Exporter Utility. You can export different raceway models to several different XML files using the Raceway Model Data Exporter utility.

1. Create the configuration file that you will use. There is a configuration file delivered in the ..\PDShell\PDExportToSP3D\config folder called *ElectricalExportConfig.txt* for the "out-of-the-box" PDS attributes. If you have added custom attributes to PDS, you will need to edit this configuration file before you can use it.
2. Execute the **RacewayModelDataExporter.exe** in *[Product Folder]*\Translators\Util\bin. The **Raceway Model Data Exporter** dialog box appears.
3. Enter a name for the **Message files folder**.
4. Enter a name for the **Catalog files folder**.
5. Enter a name for the **Reference Schema**.
6. Enter a name for the **Project Schema**.
7. Select the **Output XML file/folder** as applicable.
8. Select the **Export configuration file**.

9. Provide a name for the **Export list file** and specify the file location.

   NOTE Specify an export list file document that contains the complete file paths to the DGN files.

10. Click **Export**.

See Also

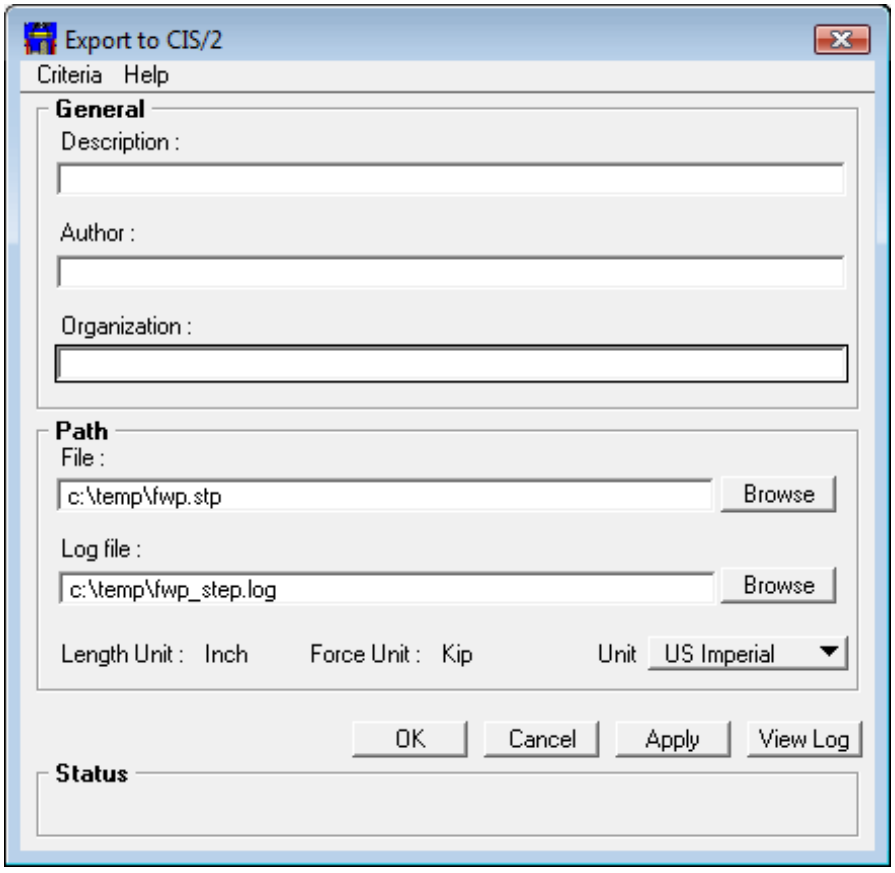
PDS Model Data Exporter (on page 19)

Exporting from FrameWorks Plus

The CIS/2 translator for FrameWorks Plus is delivered as part of a FrameWorks Plus. To use this command, open the model that you want to export to Smart 3D. Be sure to attach all reference models that are needed. Then, type **mdl load SPExport** in the MicroStation key-in field.

You can also run the CIM Steel export application, **spexport**, from a command line. For more information, see *CIM Steel Export Key-in* (on page 29).

NOTE FrameWorks Plus does not write generic solid members to the CIS/2 file.



Criteria

Activates a dialog box used to select what members to write to the CIS/2 file. For more information, see *Member Criteria* (on page 27).

Description

Enter a description for the CIS/2 file.

Author

Enter your name.

Organization

Enter your organization name.

File

Enter a name and location for the CIS/2 file.

Log file

Enter a name and location for the log file.

Units

Specify the units for the CIS/2 file.

OK

Writes the CIS/2 file and closes the dialog box. You cannot review the log file using the **View Log** command if you click **OK**. Click **Apply** if you want to review the log file at the end of the process.

Cancel

Exits the dialog box without writing the CIS/2 file.

Apply

Writes the CIS/2 file without closing the dialog box. Use this command if you want to review the log file at the end of the process.

View Log

Opens the log file for review.

Status

Displays the CIS/2 writing progress.

Based-on CIS/2 Statement for Export

Application Name:	Smart 3D
Application Version: Version 2016 (11.0)	**Date:** Tuesday, September 13, 2016
Translator Version: Version 2016 (11.0)	**Date:** Tuesday, September 13, 2016
Software Vendor:	Intergraph Process, Power & Marine 300 Intergraph Way Madison, Alabama 35758 U.S.A.

The translators for this application have been implemented in accordance with the second release of the CIMsteel Integration Standards (CIS/2.0) for the following (combination of) Conformance Classes:

- CC312, CC110, CC118, CC255, CC331, CC100, CC308

  Type of CIS Translator: Basic | **DMC** | IDI | PMR-enabled

  Data exchange capabilities: Import | **Export** | Import & Export

  Level of implementation: **File Exchange** | In memory | DBMS | KBS

  Flavors supported: EU | **US** | UK

  Unit Systems supported: **SI** | **US Imperial**

The vendor places the following riders on the operation of the translators:

- managed_data_deleted, managed_data_creation, and managed_data_transaction are not exported.

  Date of Statement: Tuesday, September 13, 2016

  Statement made by: Intergraph

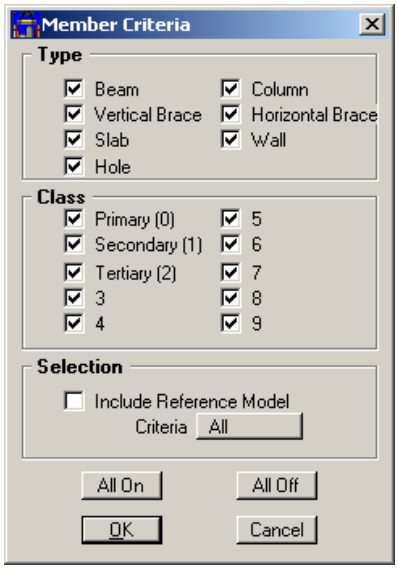
If you have any questions about using this translator, please contact Intergraph support. You can find support information on our web site: http://support.intergraph.com.

See Also

Exporting Models from FrameWorks Plus (on page 28)
Member Criteria (on page 27)
CIM Steel Export Key-in (on page 29)

Member Criteria

The **Criteria > Member Criteria** command defines which members you want to write to the CIS/2 file. Because you define the criteria for what members to write to the file here, the settings in the **Select Filter Settings** command are ignored.



Type

Toggle on the member design types you want to write to the file.

Class

Toggle on the member classes you want to write to the file.

Include Reference Model

Defines whether to write members from attached models to the file in addition to the members in the active model. You can attach models using the **File > Attach Models** command. You can detach models using the **File > Detach Models** command.

Criteria

Defines whether to write members from a selection set or to write all the members in the model to the file.

All On

Toggles on all **Design Type** and **Member Class** settings. The default is that all settings are selected.

All Off

Toggles off all **Design Type** and **Member Class** settings.

OK

Saves any changes you have made and exits the dialog box.

Cancel

Ignores any changes you have made and exits the dialog box.

See Also

Exporting from FrameWorks Plus (on page 25)
Exporting Models from FrameWorks Plus (on page 28)

Exporting Models from FrameWorks Plus

1. Start FrameWorks Plus.
2. Open the model that you want to export.
3. Attach all reference models that are needed.
4. Type **mdl load SPExport** in the MicroStation key-in field.
5. Define the **Criteria** for member selection.
6. Type a description for the file.
7. Type your name and your organization's name.
8. In the **File** box, enter a name and location for the CIS/2 step file.
9. In the **Log file** box, enter a log file name.
10. Select whether to write the SI units or Imperial Units to the file.
11. Click **Apply**.
12. Click **View Log**.

13. Carefully review the log file for errors.

See Also

Exporting from FrameWorks Plus (on page 25)
Member Criteria (on page 27)

CIM Steel Export Key-in

You can export an individual model or all the models in a project using a command line key-in. The command line export model program verifies the validity of each model before processing that model. Invalid models are not processed. Possible invalid models include models from older software versions or corrupted models where a database file is missing.

Error messages are written to a log file created in the user TEMP environment variable folder and is named FWCIMSteelExport.log.

IMPORTANT Before running this command line utility, you must create a text file, inputoptions.txt, which describes all input options based on the following file format.

File Format

```
# Models List
# This section contains a list of models with complete path.

   \\pdsserver\cimsteel\mod\model1
   \\pdsserver\cimsteel\mod\model2

# Project information
# This section includes information about author, organization and unit.
# For Unit, 1 indicates US_IMPERIAL and 2 indicates SI system of units.

   Author = FWP Developer
   Organization = Intergraph
   Unit = 1

# Member criteria selection for type
# 1 indicates that an item is selected, while 0 not selected.

   Beam = 1
   Column = 0
   VB = 1
   HB = 1
   Slab = 1
   Wall = 1
   Hole = 1

# Member criteria selection for class
# 1 indicates that an item is selected, while 0 not selected.

   Class0 = 1
   Class1 = 0
   Class2 = 1
   Class3 = 1
   Class4 = 1
   Class5 = 0
```

```
Class6 = 1
Class7 = 0
Class8 = 0
Class9 = 1
```

The command syntax is:

`<prod_dir>\bin\FWCIMSteelExport.exe <file_path>\inputoptions.txt`

Where *<prod_dir>* is where FrameWorks Plus is installed and *<file_path>* is the path to inputoptions.txt. For example, if FramesWorks Plus is installed under c:\win32app\ingr\fwplus and inputoptions.txt is under d:\temp, then the command is `c:\win32app\ingr\fwplus\bin\FWCIMSteelExport.exe d:\temp\inputoptions.txt`.

This utility creates separate step files for each model and all these step files are created in the project\int folder. The name of the file is the model name appended with _export.stp. For example, if the model name is model1.mod, then the step file name is model1_export.stp.

NOTE You can also run this utility from the PD_shell **CIM Steel Export Batch** command. In this case, PD_Shell creates input options file before running this utility.

Validate XML Import File with the XML Schema

You can validate the data contained in the XML import file against its corresponding XML schema by using the delivered ValidateXMLWithSchema.exe utility.

1. Execute the **ValidateXMLWithSchema.exe** in *[Product Folder]*\Translators\Util\bin. The **Validate XML file With Import Schema** dialog box appears.
2. Enter the XML file name or click **...** to locate the XML file.
3. Select the Schema discipline.
4. Click **Validate**.

See Also

PDS Model Data Exporter (on page 19)

SECTION 3

Importing Data from PDS

Import the XML file data using **File > Import > PDS Import** in Smart 3D.

The software updates import log files. The **To Do List** also includes any objects that require attention after importing. For more information on importing PDS data into Smart 3D, see:

- *PDS Import* (on page 31)
- *Import Structure* (on page 39)

See Also

Exporting Data from PDS (on page 14)

PDS Import

Imports PDS data from an .xml file, using mapping defined in a Microsoft Excel workbook (.xls file). The software validates the input .xml file against the defined PDS schema. Smart 3D validates the .xml file based on the PDS .xml data and the discipline PDS schema (Equipment, Piping, HVAC, or Electrical for example) to verify that the file is valid for import.

- Define your workspace before importing.
- Import PDS data using **File > Import > PDS Import**.
- Use the PDS Model Data Exporter to create the input .xml file for importing. For more information, see *PDS Model Data Exporter* (on page 19).

See Also

PDS Import Dialog box (on page 31)
Import Equipment (on page 33)
Import Piping (on page 34)
Import HVAC (on page 36)
Import Electrical (on page 37)

PDS Import Dialog Box

Input Folder/XML File

Specifies the PDS .xml file to import. Click **...** next to the field to browse to the file. If you select the parent folder, Smart 3D imports all of the .xml files in that folder.

You select any PDS .xml file. The software selects the corresponding mapping file based on the discipline and imports in the following order:

1. Import Equipment
2. Import Piping
3. Import HVAC
4. Import Electrical

Mapping File

Specifies the .xls mapping workbook. Click **...** next to the field to browse to the file.

Log File

Specifies the name and location of the log file. Click **...** next to the field to browse to the file.

Customize Input XML File

Click to import only the items that you specify. Clear to import all of the items. To specify a subset of items to import, click **Customize**.

Output XML File

Specifies the .xml file to which the software writes the output. This file is also used for a selective import.

Import

Imports the .xml file as specified without closing the dialog box.

Customize

Displays a dialog box that shows the available items to import from the .xml file. Select the items to import, and then click **OK**.

The following items might display, depending on the contents of the .xml file:

Discipline	Selectable Items
Piping	Pipelines and associated pipe runs. You can select only pipelines.
Equipment	Designed equipment and catalog equipment.
HVAC	Duct runs.
Electrical	Cableways and conduit runs.

Only items that have a name in the .xml file are available for selection. Smart 3D does not import items without names through customization. If none of the items the .xml file have names, then you cannot import them selectively. In this situation, the software displays a message telling you that there are no items to customize. You could import all of these items using the **Import** option.

Cancel

Cancels the operation.

View Log

Displays the log file as defined in the **Log File** box.

Import Equipment

Imports Equipment data from an .xml file using mapping defined in an .xls (Microsoft Excel workbook) file. The software validates the input .xml file against the defined equipment import schema to verify that the file is valid for import.

Importing PDS Parametrics as Catalog Equipment into Smart 3D:

Use the **Type** column in the **PDS-EQP-Parametrics** sheet to map PDS parametric equipment to Smart 3D catalog equipment. If you specify the **Type** as CatalogEquipment, then the software imports the corresponding parametric into Smart 3D as catalog equipment.

Case 1: Multiple parametrics might exist under a Design Equipment tag in a PDS .xml file for which the **Type** is specified as CatalogEquipment. In this case, the software creates a new equipment system, and parametrics are imported as catalog equipment into this new equipment system. If any primitives follow the parametric equipment under the Design Import tag, then the software creates an additional Design Equipment tag under the first equipment system. The primitives are then imported as corresponding shapes under this Design Equipment tag. The software names both the equipment system and the design system with the name of the design equipment originating in the input .xml.

Case 2: One or more parametrics can exist in a PDS .xml file under a Design Equipment tag. However, if the **Type** for exactly one parametric is specified as Catalog Equipment, then that parametric is imported into Smart 3D as catalog equipment. The remaining parametrics are imported as equipment components under this catalog equipment. Additionally, all the primitives that occur under the same parent Design Equipment tag are imported as shapes under this Catalog Equipment tag. Thus, in this case, the newly created catalog equipment receives the name of the design equipment from the input XML.

Sample Mapping Files

In the delivered sample mapping workbook, *EQPTranslationMap.xls*, click the **Index** tab to view the worksheet name of the sheets. Click the name to jump to that sheet. For example, click **AspectMap** and view or specify the lookup reference between Aspect attribute in XML to the S3D Equivalent Aspect.

Example mapping configuration files for importing Intergraph Schema files are delivered in [*Product Folder*]\Translators\ConfigurationFiles\Equipment.

For more information about this workbook, see *Equipment Translation Map* (on page 75).

Actions Taken

When you import equipment data, the command does the following:

- Creates the design equipment
- Adds shapes, nozzles, and parametrics to the design equipment
- Imports equipment attributes, nozzles, shapes, parametric dimensional attribute, and orientation
- Imports user attributes for equipment and nozzles

NOTE If there is an item in the .xml file that has the model system set to blank or **Undefined**, the **Import** command creates a generic system under the root with the naming convention *xxxxxxImport-Date-Time*. For example, the name might be

EquipmentImport-6-27-2005 09:09:57AM. All objects with the blank or **Undefined** parent system import to this new system. After import, you can move the objects to your own System hierarchies.

See Also

PDS Import Dialog box (on page 31)
Import Equipment Data Using PDS Model Data Exporter (on page 34)

Import Equipment Data Using PDS Model Data Exporter

1. Use the **PDS Model Data Exporter** to create an import XML file. For more information, see *PDS Model Data Exporter* (on page 19).
2. Select **File > Import > PDS Import**.

   *The **PDS Import** dialog box displays.*
3. Click **...** next to the **Import Folder/XML File** box to select the equipment .xml file to use for import.
4. Click **...** next to the **Mapping File** box to select the .xls map workbook to use for import. For more information about this workbook, see *Equipment Translation Map* (on page 75).
5. Optionally, select the **Customize Input XML File** box.
   a. Click **...** next to the **Output XML File** box to select the output .xml file path.
   b. Click **Customize** to select the items for selective import.
6. Click **Import** to import the equipment data as specified. If problems occur, check the import log file created in the same location as the input .xml file.
7. Check the **To Do List** for items that require attention after importing.

Import Piping

Imports Piping data from an .xml file using mapping defined in an .xls (Microsoft Excel workbook) file. The software validates the input .xml file against the defined Piping import schema to verify that the file is valid for import.

Sample Mapping Files

In the delivered sample mapping workbook, *PipingTranslationMap.xls*, click the **Index** tab to view the worksheet name of the sheets. Click the name to jump to that sheet. For example, click **InstrumentMap** and view or specify details about Instrument Item Mapping.

Example mapping configuration files for importing Intergraph Schema files are delivered in [*Product Folder*]\Translators\ConfigurationFiles\Piping.

For more information about this workbook, see *Piping Translation Map* (on page 86).

Actions Taken

When you import piping data, the command:

- Creates pipeline systems if they do not already exist. If the parent piping system is identified in the input XML file, the pipelines are created under the Piping systems. Otherwise, the pipelines are created under the Model root.
- Creates pipe runs, route network, and branching.

- Imports piping components along the network. However, items not listed in the mapping .xls file are not imported. Some PDS instruments and specialties might not have equivalents in Smart 3D. Also, some Smart 3D implied parts are handled differently than in PDS. Therefore, some mapping entries might need to be hard-coded to take care of them. Examples include branching components such as flanges around valves.
- Creates Smart 3D supports using G-Type graphics for PDS Physical Pipe Supports. To import G-Type graphics using Pipe Import, load the HS_System.xls file located in *[Product Folder]*\CatalogData\Bulkload\DataFiles to the existing catalog database.
- Imports tap information, specified as **GenericNotes** added on associated pipe run ends indicating tap details.
- Places supports (logical only).
- Joins pipeline ends to specified nozzles that have already been imported.
- Attempts to correct eccentric reducer offset mismatches between input data and Smart 3D.
- You must reestablish piping connectivity, because the software does not maintain this across .xml files.
- To maintain connectivity, export all models to a single .xml file.

NOTE If there is an item in the .xml file that has the model system set to blank or **Undefined**, the **Import** command creates a generic system under the root with the naming convention *xxxxxxImport-Date-Time*. For example, the name might be *PipingImport-6-27-2005 09:09:57AM*. All objects with the blank or **Undefined** parent system import to this new system. After import, you can move the objects to your own System hierarchies.

See Also

PDS Import Dialog box (on page 31)
Import Piping Data Using PDS Model Data Exporter (on page 35)
Import Sloped Piping (on page 36)

Import Piping Data Using PDS Model Data Exporter

1. Use the **PDS Model Data Exporter** to create an import .xml file. For more information, see *PDS Model Data Exporter* (on page 19).
2. Select **File > Import > PDS Import**.

   *The **PDS Import** dialog box displays.*
3. Click **...** next to the **Import Folder/XML File** box to select the .xml file to use for import.
4. Click **...** next to the **Mapping File** box to select the .xls map workbook to use for import. For more information about this workbook, see *Piping Translation Map* (on page 86).
5. Optionally, select the **Customize Input XML File** box.
   a. Click **...** next to the **Output XML File** box to select the output .xml file path.
   b. Click **Customize** to select the items for selective import.
6. Click **Import** to import the piping data as specified.
7. Check the **To Do List** for items that require attention after importing.

Import Sloped Piping

A pipe run that is non-orthogonal to the elevation plane is imported as a sloped run. During the import, the software calculates the minimum slope by considering all legs in the run. The resulting slope value is set on the imported slope run as the minimum value.

See Also

Import Piping (on page 34)

Import HVAC

Imports HVAC data from an .xml file using mapping defined in an .xls (Microsoft Excel workbook) file. The software validates the input .xml file against the defined HVAC import schema to verify that the file is valid for import.

Sample Mapping Files

In the delivered sample mapping workbook, **HVACTranslationMap.xls**, click the **Index** tab to view the individual worksheet names. Click the name to jump to that sheet. For example, click **ComponentMap** and view or specify Maps XML Component PartNumber, S3D PartClass, and S3D Part Number.

Example mapping configuration files for importing Intergraph Schema files are delivered in [*Product Folder*]\Translators\ConfigurationFiles\HVAC.

For more information about this workbook, see *HVAC Translation Map* (on page 84).

Actions Taken

When you import HVAC data, the command does the following:

- Creates duct runs
- Imports the route network
- Imports branching configurations
- Imports components
- Imports attributes and user attributes

NOTE If there is an item in the .xml file that has the model system set to blank or **Undefined**, the **Import HVAC** command creates a generic system under the root with the naming convention *xxxxxxImport-Date-Time*. For example, the name might be *HVACImport-6-27-2005 09:09:57AM*. All objects with the blank or **Undefined** parent system import to this new system. After import, you can move the objects to your own System hierarchies.

See Also

PDS Import Dialog box (on page 31)
Import HVAC Data Using PDS Model Data Exporter (on page 37)

Import HVAC Data Using PDS Model Data Exporter

1. Use the **PDS Model Data Exporter** to create an import .xml file. For more information, see *PDS Model Data Exporter* (on page 19).
2. Select **File > Import > PDS Import**.

   *The **PDS Import** dialog box displays.*
3. Click **...** next to the **Import Folder/XML File** box to select the .xml file to import.
4. Click **...** next to the **Mapping File** box to select the .xls map workbook to use for import. For more information about this workbook, see *HVAC Translation Map* (on page 84).
5. Optionally, select the **Customize Input XML File** box.
   a. Click **...** next to the **Output XML File** box to select the output .xml file path.
   b. Click **Customize** to select the items for selective import.
6. Click **Import** to import the HVAC data as specified. If problems occur, check the import log file created in the same folder as the input .xml file.
7. Check the **To Do List** for items that require attention after importing.

Import Electrical

Imports Electrical data from an .xml file using mapping defined in an .xls (Microsoft Excel workbook) file. The software validates the input .xml file against the defined electrical import schema to verify that the file is valid for import.

Sample Mapping Files

In the delivered sample mapping workbook, **ElectricalTranslationMap.xls**, click the **Index** tab to view the worksheet name of the sheets. Click the name to jump to that sheet. For example, click **Generic-ItemCode-Map** and view or specify details about Generic Conduit Component Mapping on that sheet.

Example mapping configuration files for importing Intergraph Schema files are delivered in *[Product Folder]*\Translators\ConfigurationFiles\Electrical.

For more information about this workbook, see *Electrical Translation Map* (on page 72).

Actions Taken

When you import electrical data, the command does the following:

- Creates cableways and conduit runs
- Imports the route network
- Imports branching configurations
- Imports components
- Imports attributes and user attributes

NOTE If there is an item in the .xml file that has the model system set to blank or **Undefined**, the **Import Electrical** command creates a generic system under the root with the naming convention *xxxxxxImport-Date-Time*. For example, the name might be *ElectricalImport-6-27-2005 09:09:57AM*. All objects with the blank or **Undefined** parent system

import to this new system. After import, you can move the objects to your own System hierarchies.

See Also

PDS Import Dialog box (on page 31)
Import Electrical Data Using PDS Model Data Exporter (on page 38)

Import Electrical Data Using PDS Model Data Exporter

1. Use the **PDS Model Data Exporter** to create an import .xml file. For more information, see *PDS Model Data Exporter* (on page 19).
2. Select **File > Import > PDS Import**.

   *The **PDS Import** dialog box displays.*
3. Click **...** next to the **Import Folder/XML File** box to select the .xml file to import.
4. Click **...** next to the **Mapping File** box to select the .xls map workbook to use for import.
5. Click **...** next to the **Log file** box to select the log file location.
6. Optionally, select the **Customize Input XML File** box.
   a. Click **...** next to the **Output XML File** box to select the output .xml file path.
   b. Click **Customize** to select the items for selective import.
7. Click **Import** to import the electrical data as specified. If problems occur, check the import log file created in the same folder as the input .xml file.
8. Check the **To Do List** for items that require attention after importing.

Import XMpLant Data

Import the .xml file data using the **File > Import > XMpLant Import** command in Smart 3D. The software updates the specified import log file. The **To Do List** includes any objects that require attention after importing. For more information on importing XMpLant data into Smart 3D, see *XMpLant Import Dialog Box* (on page 38).

NOTE Define the workspace before importing.

XMpLant Import Dialog Box

Input Folder/XML File

Specifies the XMpLant .xml mapping file to use for import. Click **...** next to the field to browse for the mapping .xml file. If you select the parent folder, Smart 3D imports all of the .xml files in that folder.

Mapping File

Specifies the XmpLant XML mapping file to use for import. Click **...** next to the field to browse to the mapping .xml file.

Piping objects - Example mapping configuration files for importing XMpLant Schema files are delivered to the [*Product Folder*]\Translators\ConfigurationFiles\XMpLantSP3DMaps\Piping folder.

Equipment objects - Example mapping configuration files for importing XMpLant Schema files are delivered to the [*Product*

Folder]\Translators\ConfigurationFiles\XMpLantSP3DMaps\Equipment folder.

HVAC objects - Example mapping configuration files for importing XMpLant Schema files are delivered to the [*Product Folder*]\Translators\ConfigurationFiles\XMpLantSP3DMaps\HVAC folder.

Electrical objects - Example mapping configuration files for importing XMpLant Schema files are delivered to the [*Product Folder*]\Translators\ConfigurationFiles\XMpLantSP3DMaps\Electrical folder.

Log File

Specifies the location of the log file. Click **...** next to the field to browse to the location.

Cancel

Cancels the operation.

View Log

Opens the log file.

Import

Imports the .xml file as specified without closing the dialog box.

Import Structure

The **File > Import > Structure > CIS/2** command imports a CIS/2 file into the model. This command recognizes Global User Identities (GUIDs) to uniquely identify objects and manages the electronic exchange with the other software package.

Members imported by this command are either standard or designed members depending on the cross-section specified in the import file. Assembly connections are created if that information is provided in the CIS/2 file and the appropriate import option is selected. Frame connections are always created and connect the members in the import file if the connection information is specified. Otherwise, the frame connections are set to "Unsupported".

If you have any questions about using this translator, please contact Intergraph Support. You can find support information on our web site: http://support.intergraph.com.

Import of Attributes/Properties

User-defined attributes that were defined in the third-party software and exported from that application to the CIS/2 file can be mapped and imported to Smart 3D properties using the UserAttribute_Map.xml file. A sample UserAttribute_Map.xml file is delivered with Smart 3D in the *[Product Folder]*\SmartPlantStructure\Symbols\StructureImportExportMaps folder.

If the third-party attribute that you want to map does not have an equivalent property in Smart 3D, you need to add that property to Smart 3D (using bulkload) before you can map to it in the xml file.

If the third-party attribute does not have an entry in the mapping files but a property with the same name exists in the Smart 3D, then that third-party attribute will still import and populate the Smart 3D property even though it is not in the mapping file.

What do you want to do?

- *Import Structure Model* (on page 40)

- *Preview a CIS file* (on page 40)

Import structure model

1. Click **Tasks > Structure**.
2. Click **File > Import > Structure > CIS/2**.
3. Select the system in which to place the imported objects. You can create new systems in the Systems and Specifications task.
4. Select the coordinate system to which to associate the imported objects. You can create new coordinate systems in the Grids task.
5. Specify which objects to import by selecting the **New** box or which items to update by selecting the **Modified** box.
6. Click **Defaults** and define the default properties for imported objects that do not have recognized properties.
7. Specify the file name and folder for the CIS file.
8. Define a mapping file, if needed.
9. Define a log file name and folder.
10. In the **Action** box, select **Import**.
11. In the **Option** box, select whether the software should use default properties.
12. Click **Apply** to import the CIS file.
13. Click **View Log** to review the log file.

NOTE You can use the **File > New Mapping File** command to create a section name mapping file to use when importing a structural model, or you can use one of the delivered mapping files in the *[Product Folder]*\SmartPlantStructure\Symbols\StructureImportExportMaps folder.

Preview a CIS File

1. Click **Tasks > Structure**.
2. Click **File > Import > Structure > CIS/2**.
3. Select the system in which to place the previewed objects. You can create new systems in the Systems and Specifications task.
4. Select the coordinate system to which to associate the previewed objects. You can create new coordinate systems in the Grids task.
5. Specify which objects to preview by selecting corresponding **New** or **Modified** boxes.
6. Click **Defaults** and define the default properties for imported objects that do not have recognized properties.
7. Specify the file name and folder for the CIS file.
8. Define a mapping file, if needed.
9. Define a log file name and folder.

10. In the **Action** box, select **Preview**.
11. In the **Filter** box, select the preview option to use.
12. Click **Apply** to preview the CIS file.
13. Click **View Log** to review the log file.

NOTE You must create a mapping file using the **File > New Mapping File Command** before you can use that mapping file when importing a structural model.

Import Structure Dialog Box

Controls how objects are imported from the CIS/2 import file. Be sure to check the Compatibility Matrix before you import data. Open *https://smartsupport.intergraph.com https://smartsupport.intergraph.com*, select **View Downloads** at the top, and then select **Product Compatibility** under **Useful Links** on the right.

System

Select the system to which to assign the objects being read. You can define new systems in the Systems and Specifications task. Select **More** to display all systems defined in the workspace or the model. For more information, see "Select System Dialog Box" in Place Linear Member Systems.

Coordinate System

Select the coordinate system to which to assign the objects being read. If needed, you can create a new coordinate system in the Grids task.

New

Loads any object in the CIS/2 file that is not in the model. Use the **All On** or **All Off** commands to select or clear all check boxes.

Modified

Loads any object that exists in both the CIS/2 file and the model that has changed in the CIS/2 file. Use the **All On** or **All Off** commands to select or clear all check boxes.

Members

Select to read into the model the members defined in the CIS/2 file. Openings on members are not imported. Members defined with a built-up cross-section are imported as designed members with these limitations:

- The member must be linear.
- The material and dimensions are defined by the build-up cross-section defined in the catalog. Any material or dimension values specified in the import file are ignored.
- The designed member parts must be imported along with the parent member system. Stand-alone designed member parts (such as connection parts and clip angles) are not imported.

Slabs/Plates

Select to read into the model the slabs and plates defined in the CIS/2 file. Slabs are always read into the model using a sketch 3-D path. You can edit the slab path after the import, if needed. No grid lines associated with the slab are imported, and there are no constraints assigned to the slab.

Walls

Select to read into the model the walls defined in the CIS/2 file. All walls are imported as slabs.

Openings

Select to read into the model the openings (holes) defined in the CIS/2 file for slabs, walls, grating, and checker plates.

Connections

Select to read into the model the gusset plates, clip angles, and other plates and standard sections used to connect members. The detailing software marks these objects as connection parts in the CIS/2 schema during export.

Assemblies

Select to read into the model the assemblies defined in the CIS/2 file.

All On

Click to activate all **New** and **Modified** check boxes.

All Off

Click to clear all **New** and **Modified** check boxes.

Defaults

Activates a dialog box where you define properties to use when the object being imported does not have a recognized property.

Default Properties Dialog Box

The **Default Properties** dialog box defines properties to use when the object being imported does not have a recognized property. You activate this dialog box from the main **Import Structure** dialog box by clicking the **Defaults** button.

Member Defaults

Type Category

Select the type category to use when a member being imported does not have a recognized type category. You can define a custom member type category on the **Structural Member Type** sheet in the **AllCodeLists.xls** workbook.

Type

Select the type to use when a member being imported does not have a recognized type. The properties change depending on the member type that you select. You can define a custom member type on the **Structural Member Type** sheet in the **AllCodeLists.xls** workbook.

Section Name

Select the cross-section to use when a member being imported does not have a recognized section. Sections are defined in the reference data. See the Structure Reference Data Guide for more information about reference data.

Material Name

Select the material to use when a member being imported does not have a recognized

material.

Material Grade

Select the material grade to use when a member being imported does not have a recognized material grade.

Slab Defaults

Type

Select the slab type to use when a slab being imported does not have a recognized slab type.

Composition

Select the slab composition to use when a slab being imported does not have a recognized slab composition.

Material Name

Select the material to use when a slab being imported does not have a recognized material.

Material Grade

Select the material grade to use when a slab being imported does not have a recognized material grade.

Export file

Define the file name and folder path of the CIMsteel Integration Standard file to read. We recommend using a UNC path (\\server\share\filename.stp) in this box if you are going to batch import the file so that the batch computer can locate the file.

Include mapping file

Select this option to use a mapping file when importing the members from the CIS file. You use a mapping file to:

- Swap the third-party software name for a section (for example, L3.5X2.5X1/4) with the Smart 3D name for a section (for example, L3-1/2X2-1/2X1/4). You must create the section mapping file using the **File > New Mapping File Command** before you can use the mapping file in this command. Sample mapping files for the FrameWorks Plus AISC table are delivered with the software in *[Product Folder]*\SmartPlantStructure\Symbols\StructureImportExportMaps. For more information, see *New Mapping File* (on page 48).
- Swap the third-party material and material grade name with the Smart 3D name. A sample material mapping file for AISC is delivered with the software in *[Product Folder]*\SmartPlantStructure\Symbols\StructureImportExportMaps.
- Swap the third-party user-attributes (properties) with the Smart 3D properties names. A sample user attribute mapping file is delivered with the software in *[Product Folder]*\SmartPlantStructure\Symbols\StructureImportExportMaps.

  You must bulkload (create) properties in the Smart 3D catalog for those third-party attributes that you want to map. For example, the third-party application has an attribute called "Expected Service Life" for members. Because Smart 3D does not have a property called "Expected Service Life", you need to add that property to members using reference data bulkload. See the *Reference Data Guide* and the *Catalog User's Guide* for more information on bulkloading.

Mapping file

Specify the mapping file to use if **Include mapping file** option is selected.

Log file

Specify a log file name. You can view the log file after processing by clicking **View Log**.

Action

Select whether to import or preview the contents of the CIS/2 file.

- Select **Import** to import objects from the CIS/2 into the model. This option checks the unique identification numbers in the CIS/2 file with the identification numbers of the model objects finding matching objects. This option allows you to update model objects that had been imported previously. Plate objects in the CIS/2 file are imported as slabs.
- Select **Import Ignore IDs** to import objects from the CIS/2 into the model. This option does not compare identification numbers in the CIS/2 file with the identification numbers of model objects. This option allows you to import the CIS/2 objects as new, unique objects to the model. In marine or material handling modes, plate objects in the CIS/2 file are imported as plates. In plant mode, plates in the CIS/2 file are imported as slabs.
- Select **Preview** to identify problems with the CIS/2 file before the actual import is attempted. Objects in the CIS/2 file that have not been imported cannot be previewed.

Filter

Specifies how you want to preview the CIS/2 file. This option is only available when **Action** is set to **Preview**.

- **Objects in CIS file with unknown sections, material, or type** - Select this option to help identify potential problems with the CIS/2 file before you attempt the import. After using this option, you can add unknown sections, materials, and types to the mapping file.
- **Objects in DB that exist in CIS File** - Select this option to identify objects that are in both the model workspace and the CIS/2 file.
- **Objects in DB that are modified in CIS File** - Select this option to identify objects that are in both the model workspace and in the CIS/2 file but have different attributes (such as section size) in the CIS/2 file. This option is useful when "round tripping" between Smart 3D and another software package when you want to see which objects *were* modified in the other software package.
- **Objects in DB that do not exist in CIS File** - Select this option to highlight objects in the model workspace that do not have a corresponding object in the CIS/2 file. This option is useful when the CIS/2 file was originally exported from Smart 3D and you are "round tripping" between Smart 3D and another software package. Using this option, you can locate members in the model that may have been deleted in the other software package (and therefore, were not exported to the CIS/2 file.) This option is also useful for verifying that all members in the other software package were exported to the CIS/2 file.
- **Objects in DB that are not modified in CIS File** - Select this option to identify objects that are in both the model workspace and in the CIS/2 file that have the same attributes (such as section size). This option is useful when "round tripping" between Smart 3D and another software package when you want to see what objects in the Smart 3D model were *not* modified by the other software package.

Option

Specifies how you want to import objects from the CIS/2 file. This option is only available when **Action** is set to **Import**.

- **Use no defaults** - Select this option to import only those objects known to Smart 3D (known either in the software or in the specified mapping file) sections. Objects with unknown sections are not imported into the model but are noted in the log file.
- **Use defaults if needed** - Select this option to import all objects in the CIS/2 to the model. Objects with sections not found in the software or in the mapping file will be given the sections defined in the **Defaults** dialog box. Objects imported with default sections are noted in the log file.

Submit Job

Activates the **Schedule [Task]** dialog box, which is used to define the batch import of CIS/2 files using SmartPlant Batch Services. For more information on the batch settings, see *Schedule [Task] Dialog Box* (on page 47).

View Log

Displays the import log file. You must click **Apply** when importing in order to view the log at the end of processing or to use the **Preview** option. If you click **OK**, the dialog box is closed at the end of processing and you cannot click **View Log**.

Understanding the Log File

File name : C:\CIMSteel\cis2_out.stp ---- *SHOWS HEADER INFORMATION FROM CIS/2 FILE*
Mapping file used : C:\CIMSteel\AISC_Master_Physical_Map.XML
Intergraph Smart 3D Structure Version : 09.00.10.0003
CIS/2 Version : Tekla Structures Version : Next Build: 4232 Revision : 26.1.2009
File imported on : Tue Jan 19 16:26:34 2010
Parent System : Import
Coordinate System : Global
Importing with : Use no default sections
Processing Options : ---- *SHOWS HOW THE OPTIONS WERE SET ON THE DIALOG BOX*
New : On or Off
    Members : ON
    Slabs and Plates : ON
    Walls : ON
    Openings : ON
    Connections : ON
    Assemblies : ON

Modified : On or Off
    Members : ON
    Slabs and Plates : ON
    Walls : ON
    Openings : ON
    Connections : ON
    Assemblies : ON

**********Summary**********

Linear Members..... 333 ---- *LISTS SUCCESSFULLY IMPORTED OBJECTS TOTAL*
Curved Members..... 0

Slabs..... 0
Walls (imported as Slabs)..... 0
Plates..... 6
Openings..... 48
Stair Assemblies..... 8
Stair Parts..... 18
Ladder Assemblies..... 3
Ladder Parts..... 0
Handrail Assemblies..... 76
Handrail Parts..... 249
Assy Connections..... 0
Connection Parts..... 0
Embedment Assemblies..... 0
Embedment Parts..... 0

Total Number of Objects Imported: 741
Total Number of CIS Entities in the import file... 1133
Total Number of Items not found in the catalog..... 360

****

CROSS SECTIONS --- *LISTS ANY MISSING AND MAPPED CROSS-SECTIONS*

Cross Sections	Encountered	Mapped To
PL9.525*127	65	Not Found
W8x13	109	W8*13
W13*56	9	W8x13 (Default)

MATERIALS --- *LISTS ANY MISSING AND MAPPED MATERIALS*

Materials	Encountered	Mapped To
ANTIMATERIAL	30	A36

Import structure completed successfully on: Tue Jan 19 16:29:40 2010.

```
**********DETAILED SUMMARY**********
Plates Using Default material
2331884
2331863
2331842
1873861
1873822
Linear Members with Missing Cross Sections
2354361
2354229
2013930
2013876
Handrail Parts with Missing Cross Sections
```

```
2154615
1995739
1995257
1994775
1994293
Stair Parts with Missing Cross Sections
1908086
1908063
1908040
Zero Length Ladder Parts
2265509
2264060
1880386
Ladder parts with Missing Cross Sections:
1880370
1880231
1880223
1880213
************************************************************
```

Schedule [Task] Dialog Box

Queue

Displays the name of the queues configured by an administrator for the job. For more information on configuring the queues, see *Configure Queues for Jobs* in the *Project Management User's Guide*.

Run job

Sets the frequency with which the job runs. Jobs can be scheduled to run once or on a regular interval (daily, weekly, or monthly). Depending on the job frequency selected, additional controls display. These controls allow you to define more specific scheduling information. The scheduling controls can be changed only at job submission.

Run on

Sets the time to start running the job.

Options

Opens the *Optional Schedule Properties Dialog Box* (on page 48) that you can use to define a start and end date.

Run on box

Contains a calendar from which you can select the run date. This option is available when you select **Once** from **Run job**.

Every X days

Specifies how many days pass between job runs. This option is available when you select **Daily** from **Run job**.

Every X weeks

Specifies how many weeks pass between job runs. In addition, you can select on which days the job runs. This option is available when you select **Weekly** from **Run job**.

Day X of the month

Specifies on which day of the month the job runs. This option is available when you select **Monthly** from **Run job**.

The X Y of the month

Specifies on which day of the month the job runs. For example, you can select the last Monday of the month. This option is available when you select **Monthly** from **Run job**.

Job Start

Notifies you when the job starts, if Outlook is set up.

Job Completion

Notifies when the job completes, if Outlook is set up.

Job Abort

Notifies you if the job aborts, if Outlook is set up.

Address Book

Selects the name of the person to be notified by e-mail of the job status, if Outlook is set up. If Outlook is not available, this option does not work. You can also type the address manually. The person you define here receives an email with the job log files after the job finishes.

NOTES

- The Batch Services SMTP option must be configured on the batch server for this to work. For more information, see the Intergraph Smart Batch Services documentation.
- The WinZip application is no longer required on the batch server to compress any emailed attachments. Compression is now done with functionality included in Smart 3D.

Optional Schedule Properties Dialog Box

Provides more options on the **Schedule Backup** dialog box. This dialog box opens when you click **Options**.

Start date

Sets an optional start date.

End date

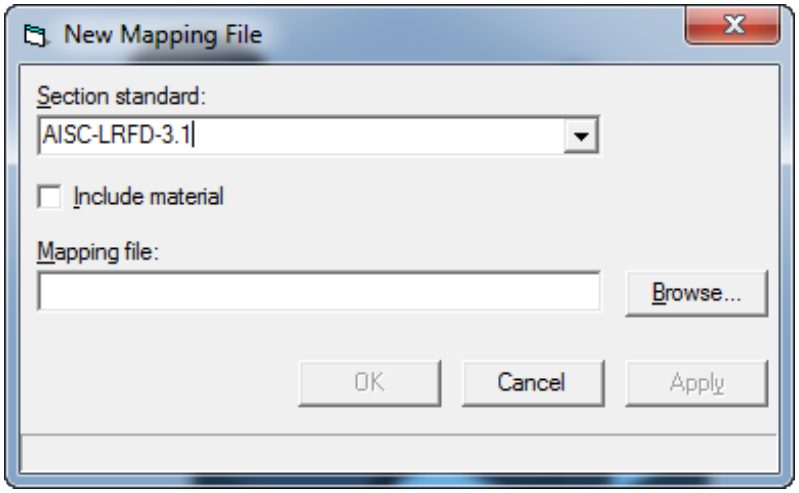
Sets an optional end date, if checked.

New Mapping File

The **File > New Mapping File** command creates an XML mapping file for the section names, and optionally material names, used in the software and third-party application. Many times, the software and the third-party application use different names for the same section or material. The mapping file solves the naming conflicts by mapping section names in the software to section names in the other applications. The mapping file must contain each section standard table that you have used in the model.

CAUTION The mapping file created by this command is a template. The software does not write known-to-be-different section names to the mapping file. You are responsible for verifying, editing, updating, and maintaining the third-party application section names in the file.

New Mapping File Dialog Box



Section standard

Select the section standard table for which to create a mapping file.

Include material

Select to include material name mappings in addition to the section name mappings.

Mapping file

Specify a name and folder path for the XML mapping file.

Mapping File Format

The mapping file is an XML-formatted file with which you can define mappings for section names, material names, member types, slab types, and user-defined attribute/properties between Smart 3D and the third-party software. The format for each mapping is given below. You can include all five mappings in a single XML file, or you can define the mappings in separate XML files and reference the five files in a single master XML file using include statements. Using separate files that are pulled together using include statements might be a better workflow as it allows you to quickly mix and match files for different requirements.

You cannot nest include files. Only the master XML mapping file can call an include file. You cannot call another include file inside an include file. An example of a master XML mapping file is shown below:

```
<xml>
<!-- Comment Line -->
    <IncludeXML href="SectionStandard.xml" />
    <IncludeXML href="Material.xml" />
    <IncludeXML href="MemberTypes.xml" />
    <IncludeXML href="SlabTypes.xml" />
    <IncludeXML href="UserAttribute_Map.xml" />
</xml>
```

Section Mapping

The <SectionStandard> area maps the software section names to the third-party section names. The software section names are labeled **section name**. The third-party section names are

labeled **externalname**. When the XML file is created, the software section name is duplicated for the third-party section name. You must verify that the correct third-party section name is defined for **externalname** by manually editing the XML file.

```
<xml>
<!-- Comment Line -->
<SectionStandard>
    <Standard name="AISC-LRFD-3.0" externalname="AISC" externalorganization="user"
                  externaldate="2002" externalversion="1.0" />
        <Sections>
            <Section name="W10x39" externalname="W10x39" />
            <Section name="W10x33" externalname="W10x33" />
            <Section name="W10x30" externalname="W10x30" />
            ...
        </Sections>
</SectionStandard>
</xml>
```

Material Mapping

The <MaterialStandard> area maps the software material grade names to the third-party material grade names. You must have selected the **Include material** option when you created the XML file to see the material grade name mappings. The software materials are labeled **Material type** and **grade**. The third-party material names are labeled **externalname**. You must verify that the correct third-party material grade name is defined for **externalname** by manually editing the XML file. You must provide the external material standard name information by manually editing the XML file.

```
<xml>
<!-- Comment Line -->
<MaterialStandard>
    <Standard name="" externalname="" externalorganization="" externaldate="" externalversion="" />
        <Materials>
            <Material type="Steel - Carbon" grade="A36" externalname="A36" />
            <Material type="Steel - Carbon" grade="A529" externalname="A529" />
            <Material type="Steel - Carbon" grade="A588" externalname="A588" />
            ...
        </Materials>
</MaterialStandard>
</xml>
```

Member Type Mapping

The <MemberTypes> area maps the software member types to the third-party member types. You must create this section in a text editor. The software member types are labeled **Member type**. The third-party member types are labeled **externaltype** and **externalrole**.

```
<xml>
<!-- Comment Line -->
<MemberTypes>
    <Member type="Beam" externaltype="Beam" externalrole="" />
    <Member type="Girder" externaltype="Beam" externalrole="gantry_girder" />
    <Member type="Joist" externaltype="Beam" externalrole="joist" />
    ...
</MemberTypes>
</xml>
```

Slab Type Mapping

The <SlabTypes> area maps the software slab types to the third-party slab types. You must create this section in a text editor. The software slab types are labeled **Slab type** and **composition**. The third-party slab types are labeled **externaltype**.

```
<xml>
<!-- Comment Line -->
<SlabTypes>
   <Slab type="4&quot; Cast in Place" composition="CIP_4&quot;_Fc3" externaltype="slab" />
   <Slab type="4&quot; Cast in Place" composition="CIP_4&quot;_Fc4" externaltype="flat_slab" />
   <Slab type="5&quot; Cast in Place" composition="CIP_5&quot;_Fc3" externaltype="wall" />
    ...
</SlabTypes>
</xml>
```

User Attribute Mapping

The <UserAttributes> area maps third-party software attributes to Smart 3D properties. You must create this section in a text editor.

```
<xml>
<!-- Comment Line -->
<UserAttributes>
    <Object type="CSPSMemberSystemLinear" externaltype="assembly_design_structural_member_linear"  role="" >
          <Interface name="IJUAStructuralFrameItemAttributes" externalname="IJUAStructuralFrameItemAttributes" >
              <Attribute name="item_number" externalname="item_number" />
              <Attribute name="item_name" externalname="item_name" />
              <Attribute name="item_description" externalname="item_description" />
              <Attribute name="life_cycle_stage" externalname="life_cycle_stage" />
          </Interface>
          <Interface name="IJUAStructuralFrameProductAttributes" externalname="IJUAStructuralFrameProductAttributes" >
              <Attribute name="life_cycle_stage" externalname="life_cycle_stage" />
          </Interface>

          <Interface name="IJUAAssemblyAttributes" externalname="IJUAAssemblyAttributes" >
              <Attribute name="assembly_sequence_number" externalname="assembly_sequence_number" />
            <Attribute name="complexity_level" externalname="complexity_level" />
          </Interface>

          <Interface name="IJUAADSMAttributes" externalname="IJUAADSMAttributes" >
              <Attribute name="key_member" externalname="key_member" />
              <Attribute name="structural_member_use" externalname="structural_member_use" />
              <Attribute name="Floor Thickness" externalname="Floor Thickness" />
              <Attribute name="structural_member_class" externalname="structural_member_class" />
          </Interface>
    </Object>
...
</UserAttributes>
</xml>
```

Create a Mapping File

1. Click **File > New Mapping File**.
2. In the **Section standard** box, select the section standard for the mapping file.
3. Optionally, select **Include material** to write material names to the mapping file.
4. Click **Browse**, and then specify a name and folder location for the mapping file.
5. Click **OK**.
6. Edit the mapping file using a text editor such as Notepad, and define the third-party standard section, material names, member types, and slab types.

See Also

New Mapping File Command (see "*New Mapping File*" on page 48)

SECTION 4

Using the PDS Translator

The PDS (Plant Design System) Translator allows you to migrate your PDS piping specifications to Smart 3D piping reference data. The tool also allows you to populate dimension table name rules and to update industry commodity codes.

IMPORTANT The PDS translation process requires the specification writer to make some manual edits to complete the conversion.

Workflow

1. *Create PDS Export data files* (on page 52).
2. *Edit the Piping Translation Rules Workbook* (on page 53).
3. *Populate Dimension Table name rules* (on page 54).

   NOTE Populating the dimension table name rules is performed only once, before the translation process.
4. *Translate PDS reference data* (on page 55).

   NOTE You may need to run the translation step a number of times.
5. After translation, define necessary manual information. For information on defining manual translation, see *Define Manual Information after Translation* (on page 56). For information about required reference data, refer to *Required Worksheets* (on page 58).
6. *Create Commodity Codes* (on page 61) (optional).
7. Bulkload the translated workbooks: piping specification data, piping commodity data, and codelist data.
8. Run the **Verify Consistency** command in the Catalog task. For more information, see the *Catalog User's Guide* available from the **Help > Printable Guides** command.
9. Run the PDS Model Data Exporter, and import the PDS model data into the software. For more information, see the *Common User's Guide,* available from the **Help > Printable Guides** command.

See Also

PDS Piping Reference Data Translator Dialog Box (on page 62)

Create PDS Export Data Files

- Create the following export data files, and place them in the **..\PDSAsciifiles** folder:
  - implied.data
  - taps.data
  - us_lgbom.data
  - us_shbom.data

- code148.edt
- code 499.edt
- PD_tbl_list
  - Physical Data Library text list (rename PD_tbl_lst and save)
  - Piping Job Spec Library test list (rename PD_tbl_lst and save)

- PCD files (*.pcd)
- PMC files (Any file(s) with a .pmc extension in the PDSAsciiFiles folder will be translated.)
- Table checker report list
  - Table Checker Files text list -
  - Table checker output files (format table_chk_2)

See Also

Using the PDS Translator (on page 52)

Edit the Piping Translation Rules Workbook

1. In Windows Explorer, browse to *[Product Folder]*\CatalogData\PDSTranslator\Docs.
2. Open the applicable Piping Translation Rules workbook (one workbook is for the DIN standard; the other workbook is ANSI).
3. Modify the worksheets as follows.

   Cap Screw Commodity Codes sheet - Edit this sheet to match your requirements. The delivered workbook is the Intergraph standard.

   Dimension Table Names sheet - Remove all the delivered file names.

   IMPORTANT Remove the gasket gap tables from the

   Dimension Table Names sheet. Additionally, remove the gasket gap table name from the PDS PMC file, and replace it with the default gasket gap.

   Elimination of Weight Code sheet - Map the user-defined weight codes from PDS to the applicable Smart 3D codes.

   End Preparation sheet - Edit this sheet to match your requirements.

   Engineering Tag sheet - Modify the mapping from PDS valves to Smart 3D tag numbers. The delivered sheet contains Intergraph standard valves.

   Fabrication Category sheet - Add the user-defined fabrication categories, and apply the fabrication types and responsibilities as necessary.

   File Names sheet - Edit the input file names as required, and remove unnecessary records. Make sure that all file names are correctly specified and that you do not have more files than needed.

   Miscellaneous sheet - Edit the values on this sheet as necessary.

   NOTE The size-dependent commodity codes flag refers only to the PCD format, and not to the Project Administrator option in PDS. Set this option to YES only if you have ALL individual NPD values in the PCD (for example, when you have all NPD values for piping commodities from 2" to 6"). The software includes a worksheet for size-dependent codes

from pdtable_212. You must type sizedep.txt (or other file name) on the **File Names** worksheet in the appropriate option row. This file is a report of size-dependent commodity codes.

PDS Commodity Name sheet - Add any user-created or modified AABBCC codes as required. Additionally, make sure all AABBCC codes used in your PDS specs are there.

PDS Model Code sheet - Add any user-created or modified Model codes as required. Also, make sure all Model codes used in your PDS specs are there.

Wall Thickness Reihe Number sheet - This sheet is only applicable for DIN specs.

Weight Table Name Format sheet - Edit codelists and commodity codes based on the specific customization. Commodity code issues may exist for cap screws, weight codes, end preparations, valve engineering tags, and fabrication categories and responsibilities.

You will need to revise and add information as required for commodity codes.

Nipples must be manually added to the Dimension Table Names sheet if the table checker was run without weight codes. In addition, blind flanges must be manually added to the Dimension Table Names sheet if the table checker was run without weight codes.

See Also

Using the PDS Translator (on page 52)

Populate Dimension Table Name Rules

Before you start this procedure, edit the **AllCodeLists.xls** workbook to match any customization in the PDS project.

1. In Windows Explorer, navigate to the software installation folder.
2. Under [*Product Folder*]\CatalogData\PDSTranslator\Bin, double-click **PDSDatatranslator.exe**.

   TIP The Workstation setup includes the PDSTranslator folder only if you have specified the Project Management option during installation.
3. Select the **Populate 'Dimension Table Names' Rule** option on the **PDS Piping Reference Data Translator** dialog box
4. In the **PDS ASCII Files Location** box, browse to the location that stores your PDS reference data.
5. In the **PDS Translation Rules** box, browse to the location that stores the edited PDS translation rules, which are in Excel workbook (.XLS) format. Type the name of a workbook.

   TIP The software includes two translation rules workbooks in the [*Product Folder*]\CatalogData\PDSTranslator\Docs folder: **Piping Translation Rules DIN.xls** and **Piping Translation Rules.xls**. You can edit these workbooks according to your project.
6. In the **Translator Error Log** box, browse to the location where you want the log file stored, and type the name of the log file.
7. Click **Populate**.

See Also

Using the PDS Translator (on page 52)

Translate PDS Reference Data

Before you start this procedure, edit the **AllCodeLists.xls** workbook to match any customization in the PDS project.

1. In Windows Explorer, navigate to the software installation folder.
2. Under [*Product Folder*]\CatalogData\PDSTranslator\Bin, double-click **PDSDatatranslator.exe**.

   TIP The Workstation setup includes the PDSTranslator folder only if you have specified the Project Management option during installation.
3. Select the **Translate PDS Reference Data** option on the **PDS Piping Reference Data Translator** dialog box.
4. Under **Commodity Code Option**, specify either the contractor commodity codes or the industry commodity codes.
5. In the **PDS ASCII Files Location** box, browse to the location that stores your PDS reference data.
6. In the **PDS Translation Rules** box, browse to the location that stores the edited PDS translation rules, which are in Excel workbook (.XLS) format. Type the name of a workbook.

   TIP The software includes two translation rules workbooks in the [*Product Folder*]\CatalogData\PDSTranslator\Docs folder: **Piping Translation Rules DIN.xls** and **Piping Translation Rules.xls**. You can edit these workbooks according to your project.
7. In the **PDS Code Lists** box, browse to the location where the codelist information is stored, and type the name of a workbook.

   TIPS
   - The translation process does not convert PDS codelists.
   - The process uses two Smart 3D codelists that relate to dimensional data. These codelists are located in **AllCodeLists.xls**.
8. In the **SmartPlant 3D Piping Excel File** box, browse to the location where you want the Excel workbooks to be stored, and type the name of a workbook. The format is Excel workbook format (.XLS).

   TIP If you provide a name for the Excel file, the translator uses this name as a prefix for the names of the generated Excel workbooks. For example, if you type **PdsTranslation.xls**, the utility exports two files: **PdsTranslation_Catalog.xls** and **PdsTranslation_Specification.xls**.
9. In the **Translator Error Log** box, browse to the location where you want the log file stored, and type the name of the log file.
10. Click **Translate**. When the process finishes, the status bar on the translator displays **Finished**.
11. Review the error log.

NOTE Based on the errors, you can decide to do one of the following: 1) Revise the input data, delete the output files, and re-translate, OR 2) edit the output files.

See Also

Using the PDS Translator (on page 52)

Define Manual Information after Translation

IMPORTANT

- The specification writer usually performs this procedure.
- For more information about required reference data, see *Required Worksheets* (on page 58).

1. Open the Piping Catalog and Specification workbooks.
2. In the Catalog workbook, do the following:
   - Add worksheets as necessary. For more information, see *Required Worksheets* (on page 58).
   - Add **oa:Rotation** to all valves with operators.
   - Add **oa:Angle** to all elbows.
   - Add **oa:SpectaclePosition** to all spec blinds.
   - Add **oa:EccentricOffsetBasis** to all eccentric reducers.
   - On the **Piping Female End Generic Data** sheet, define values for socket offset, thread depth, hub outside diameter, and hub thickness.
   - On the **Piping Bolted End Generic Data** sheet, define values for flange thickness tolerance, flange face projection, raised face diameter, flange groove width, standard nut height for studs, standard washer thickness for studs, standard bolt extension for studs, standard nut height for machine bolts, standard washer thickness for machine bolts, and body outside diameter.

     TIPS

     - Change the bolt extension to address the use of nut height and washer thickness.
     - Add the drilling template data for PDS through-bolted ends without bolt holes.
     - If almost precise STUD tables were used in PDS, remove the drilling template data.
   - On the **Bolt Part Data** sheet, define the values for the maximum temperature, fluid code, ring number, and type any comments as necessary.
   - On the **Gasket Part Data** sheet, define the values for ring number and gasket type.
   - If you chose to use the SP3Dolet symbol definition for all your olets, you must manually add the other two required symbol input dimensions (MajorBodyDiameter and HoleinHeader) that the translator does not add to the olet part sheets. Failure to add the two additional dimensions will cause the placement of olets to fail. As an alternative, you can use the SP3DOletG symbol, which only requires the same single input dimension (FacetoHeaderSurface) as PDS.
3. In the Specification workbook, do the following:
   - Add worksheets as necessary. For more information, see *Required Worksheets* (on page 58).
   - Edit the **Bend Angles** sheet as necessary.
   - Edit the **Weld Clearance** sheet as necessary.
   - Edit the **Pipe Takedown Parts** sheet as necessary.

- Check the **Piping Commodity Filter** sheet for zero entries for RCP (red connect point) for olets. For some olet type components, the translator may miss the second connect point data, so you must manually verify the correct mapping.
- On the **Piping Commodity Material Control Data** sheet, define the values for cap screw diameter and for tapped hole depth.
- On the **Bolt Selection Filter** sheet, define the value for bolt priority. Also, complete the comments as necessary.

  TIPS

  - If the PDS translator encounters two through-bolted fittings requiring a complete substitution of cap screws; and both through-bolted fittings have identical bolted ends in terms of end preparation, pressure rating, and end standard; and the two through-bolted fittings imply different cap screw commodity codes in PDS, only one cap screw record will be created in the Bolt Selection Filter. The PDS Translator will arbitrarily choose one of the two cap screw commodity codes, and the specification writer must manually add the second cap screw by use of the bolt option.
  - If the PDS translator encounters a through-bolted fitting requiring a complete substitution of cap screws; and the through-bolted fitting implies two different cap screw commodity codes in PDS based on two different size ranges, only one cap screw record will be created in the Bolt Selection Filter. The PDS Translator will arbitrarily choose one of the two cap screw commodity codes, and the specification writer must manually add the second cap screw by use of a different size range.
  - On the **Gasket Selection Filter** sheet, define the value for ring number. The maximum temperature was used as the ring number in the delivered PDS data, but a rule has not been defined to translate from the commodity code and maximum temperature to ring number.
  - On the **Permissible Taps Data** sheet, define the value for IsPreferredTap.
  - Optionally, edit the **Index** sheet. Add or edit hyperlinks.
  - Optionally, edit the **Revision History** sheet.

4. Save the catalog and specification workbooks and exit.
5. Open the **AllCodeLists.xls** workbook and edit as necessary. Save and exit.

NOTES

- For the CL51 through CL56 rating items, the rating must be changed to a schedule/thickness value.
- PDS geometry standards must be replaced with industry standards. The following table shows the corresponding US Practice Geometry standards.

6 = 'PDS- P1'
7 = 'PDS- P2'
8 = 'PDS- P3'
11 = 'PDS- I1'

12 = 'PDS- I2'
13 = 'PDS- I3'
16 = 'PDS- Op1'
17 = 'PDS- Op2'
18 = 'PDS- Op3'

- For reinforcing pads using a geometry standard of 6 (or other), the value can be removed from the **PipingCommodityMatlControlData** worksheet in column P. This record is not required for Smart 3D.
- Items using any user-defined or customized geometry standards require that the values are added to the **AllCodelists** workbook.

See Also

Using the PDS Translator (on page 52)

Required Worksheets

This topic provides information about the worksheets that are required for loading into a new Catalog database.

If you are translating reference data from PDS, this information will be helpful as you edit the output from the translator.

*prefix*_Catalog.xls

Worksheet Name	**Comments**
CustomClassInterfaceList **CustomInterfaces** **CatalogRoot** **GUIDs** Revision History (optional) Part Classes - dependent on the input files for the translation	Worksheets listed in **bold** are required.

*prefix*_Specification.xls

Worksheet Name	**Comments**
▪ NPDEquivalence ▪ *MaterialsData* ▪ *Bolt Extension* ▪ *StandardNotesData*	These worksheets are project-related worksheets in the specification reference data. Bulleted worksheets are present in the translated output file.

Worksheet Name	Comments
▪ **PipingMaterialsClassData** ▪ BoltCommodityCodeSubstRule ▪ **PipingCommodityMatlControlData** ▪ *ValveOperatorMatlControlData* ▪ *PipingSpecialtyClassData* ▪ *PipingInstrumentClassData* ▪ *PipingCommodityProcurementData* **DefaultProjectOptions** **ShortCodeHierarchyRule** *PreferredStudBoltLength* StudBoltCalculationTolerance *PreferredMachBoltLength* MachBoltCalculationTolerance *PreferredCapScrewLength* CapScrewCalculationTolerance WeldModelRepresentation PortAlignment SlipOnFlangeSetbackDistance WeldTypeRule **DefaultChangeOfDirection** **DefaultCommoditySelectionRule** MinimumPipeLength MinPipeLengthPurchase FieldFitLength **MatingPorts** FlaredPipe FluidDensity *BoltExtension*	NPDEquivalence and MaterialsData worksheets are present in the output; however, they may be empty in the translated workbook. Worksheets in **bold** are the minimum required. Worksheets in *italics* are required only if the corresponding commodities exist in the piping commodity filter. For example, if stud bolts are present, then the PreferredStudBoltLength worksheet is required.

*prefix*_Specification.xls

Worksheet Name	Comments
▪ *Service Limits* ▪ **Pipe Nominal Diameters** ▪ *Pipe Branch* ▪ *Permissible Taps* ▪ *Joint Quality Factor* ▪ *ThicknessDataRule* ▪ *ReinforcingPadData* ▪ *Reinforcing Weld Data* ▪ **PipingCommodityFilter**	These worksheets are specification-related worksheets in the specification reference data. The bulleted worksheets are present in the translated output file. Worksheets in this row are required for each piping material class. Worksheets in **bold** are the minimum required.

Worksheet Name	Comments
▪ *BoltSelectionFilter* ▪ *NutSelectionFilter* ▪ *WasherSelectionFilter* ▪ *GasketSelectionFilter* ▪ *ClampSelectionFilter* CorrosionAllowance MinimumPipeLengthRulePerSpec MinPipeLengthPurchasePerSpec PipeBendingElongation PipeBendingElongationPerSpec PipeBendRadii **BendAngles** DefaultChangeOfDirectionPerSpec WeldClearanceRule InsideSurfaceTreatment ServiceLimitsForJackets PipeBranchForJackets PermissibleJacketAndJumperSizes PermissibleJacketSizeExceptions FlaredPipePerSpec PortAlignmentPerSpec FieldLiningThickness **PipeTakedownParts**	

AllCodeLists.xls

Worksheet Name	Comments
All worksheets	The translator does not convert codelists. Make sure that the codelists meet the project requirements.

AllCommon.xls

Worksheet Name	Comments
Material **OutfittingCrossSections**	The required worksheets are shown in **bold**. The **AllCommon.xls** workbook also contains worksheets with delivered generic data for piping.

BulkLoadIsoKeys.xls

Worksheet Name	Comments
All worksheets	This workbook is required for isometric drawing extraction.

Equipment.xls

Worksheet Name	Comments
All worksheets	This workbook is required for equipment placement.

GenericNamingRules.xls

Worksheet Name	Comments
All worksheets	Required.

InsulationData.xls

Worksheet Name	Comments
All worksheets	This workbook is required if you want to have insulation specifications.

StructCrossSections-AISC-LRFD-3.0.xls

Worksheet Name	Comments
All worksheets	This workbook is required for placement of US steel sections.

Create Commodity Codes

1. In Windows Explorer, navigate to the software installation folder.
2. Under [*Product Folder*]\CatalogData\PDSTranslator\Bin, double-click **PDSDatatranslator.exe**.

   TIP The Workstation setup includes the PDSTranslator folder only if you have specified the Project Management option during installation.
3. Select the **Create Commodity Codes** option on the **PDS Piping Reference Data Translator** dialog box.
4. Under **Commodity Code Option**, specify either the contractor commodity codes or the industry commodity codes.
5. In the **PDS Code Lists** box, browse to the location where the PDS codelist information is stored, and type the name of a workbook. The codelists are in Excel workbook format (.XLS).
6. In the **SmartPlant 3D Piping Specification Data** box, browse to the location that stores your piping specification workbook (.XLS).Type the name of a workbook.

   TIP The software includes template files for piping specification and catalog data in the [*Product Folder*]\CatalogData\PDSTranslator\Bin folder: **Piping Specification Template.xls** and **Piping Catalog Template.xls**.
7. In the **SmartPlant 3D Piping Catalog Data** box, browse to the location that stores your piping catalog workbook (.XLS). Type the name of a workbook.

8. In the **Translator Error Log** box, browse to the location where you want the log file stored, and type the name of the log file.
9. Click **Create**.

NOTES

- For the industry commodity code option, you can view the resulting Piping Commodity Filter sheet and the Pipe Stock sheet to see the updated commodity codes. The Bolt Selection Filter and Gasket Selection Filter commodity codes are also translated.
- For the contractor code option, the following items will not generate a new commodity code unless the table checker output generated table names for these items: nipples, blind flanges, reinforcing pads, and reinforcing welds.

See Also

Using the PDS Translator (on page 52)

PDS Piping Reference Data Translator Dialog Box

Allows you to translate PDS reference data to Smart 3D reference data.

Translate PDS Reference Data

Translates PDS data.

Populate 'Dimension Table Names' Rule

Creates one of the translation rules.

Create Commodity Codes (optional)

Updates the contractor or industry commodity codes.

Commodity Code Option

Allows you to specify whether you want to update the contractor or industry commodity codes. This option is available when you are using the **Translate PDS Reference Data** mode or the **Create Commodity Codes** mode.

PDS ASCII Files Location

Specifies the location of the PDS reference data files.

PDS Translation Rules

Specifies the translation rules file. This file is in Excel workbook (.XLS) format.

PDS Code Lists

Specifies the location of the Smart 3D codelist file. This file is in Excel workbook (.XLS) format. This box is unavailable for the **Populate 'Dimension Table Names' Rule** option.

SmartPlant 3D Piping Excel File

Specifies the Smart 3D reference data file. This file is in Excel workbook (.XLS) format. This box is unavailable for the **Populate 'Dimension Table Names' Rule** option.

SmartPlant 3D Piping Specification Data

Specifies the piping specification data file. This file is in Excel workbook (.XLS) format. This box is only available for the **Create Commodity Codes** option.

SmartPlant 3D Piping Catalog Data

Specifies the piping catalog data file. This file is in Excel workbook (.XLS) format. This box is only available for the **Create Commodity Codes** option.

NOTE It is possible that the catalog and specification information is in one file.

Translator Error Log

Specifies the location for the log file that provides the results of the process.

See Also

Using the PDS Translator (on page 52)

Using the Piping Commodity Filter Cleanup Utility

The Piping Commodity Filter Cleanup utility is a tool for cleaning up translated PDS piping specification data by merging common records that can result from the differing structures of PDS and Smart 3D piping reference data.

Here are some important points to remember about this utility.

- The Piping Commodity Filter Cleanup utility deletes duplicate records in the piping commodity filter.
- The utility scans the **Piping Nominal Diameters** sheet for valid sizes, then processes the **Piping Commodity Filter** (PCF, in this topic) sheet in the specified file, and merges common records when the values of all properties (except the **First Size, From** and **First Size, To** properties) are identical.
- The utility does not support the cleanup of catalog (part) sheets.
- The utility can clean only one piping commodity filter sheet at a time.
- The utility overwrites the cleaned specification PCF workbook and reports results in a log file.

Limitations

- The **Piping Nominal Diameters** sheet and the **Piping Commodity Filter** (PCF) sheet must be in the workbook specified for processing.
- The utility does not merge multi-size items, such as reducers and reducing tees, unless all the records in the first size and second size match.
- The utility may change the formatting of some merged cells. If you require specific formatting, it may be necessary to apply the required formats to modified cells after the cleanup is completed.

For assistance with translating your PDS data, please contact Intergraph Support. You can find support information on our web site: http://support.intergraph.com

See Also

Use the Piping Commodity Filter Cleanup Utility (on page 63)

Use the Piping Commodity Filter Cleanup Utility

IMPORTANT Before running the Piping Commodity Filter Cleanup utility, you must convert at least one PDS specification using the PDS translator. The conversion results in one

specification workbook and one catalog workbook per spec. The specification workbook contains the piping commodity filter and piping nominal diameter information.

1. In Windows Explorer, navigate to the software installation folder.
2. Under [*Product Folder*]\CatalogData\PDSTranslator\Bin, double-click **CleanupUtility.exe**.

   TIP The Workstation setup includes the PDSTranslator folder only if you have specified the Project Management option during installation.
3. In the **Excel file** box, browse and select the Excel workbook (.XLS format) that contains the **Piping Commodity Filter** and **Pipe Nominal Diameter** sheets. This workbook must not be read-only.
4. In the **Log file** box, browse to the location where you want the log file stored.
5. Click **Start Cleanup**. As the utility processes the files, you can view the status messages on the dialog box. After completion, "Finished" appears on the dialog box.

NOTES

- The process overwrites the Excel workbook.
- The process does not mark any records in the workbook as changed.

See Also

Using the Piping Commodity Filter Cleanup Utility (on page 63)

Piping Commodity Filter Cleanup Utility

This utility allows you to clean piping commodity filter data after translation. Duplicate records in the piping commodity filter are deleted. The utility also merges records when the values of all properties (except the **First Size, From** and **First Size, To** properties) are identical.

For assistance with translating your PDS data, contact Intergraph Process, Power & Marine Support.

Excel file

Specifies the Excel specification workbook (.XLS format) that contains the **Piping Commodity Filter** and **Pipe Nominal Diameter** sheets.

Log file

Specifies the log file that provides the results of the process.

Start Cleanup

Starts the process. The utility saves the data upon completion of the process.

See Also

Using the Piping Commodity Filter Cleanup Utility (on page 63)
Use the Piping Commodity Filter Cleanup Utility (on page 63)

Using the Pipe Branch Cleanup Utility

The Pipe Branch Cleanup utility is a tool for cleaning translated PDS piping specification branch table data by removing invalid records based on available piping diameters per spec. These records may exist in translated PDS reference data or user-defined specification workbooks.

Here are some important points to remember about this utility.

- The utility scans the **Pipe Nominal Diameters** sheet for allowable sizes per spec.
- The utility then applies the available diameters to the appropriate branch tables.
- The utility removes records from the **Pipe Branch** sheet that reference invalid diameters for the spec as defined in the **Pipe Nominal Diameters** worksheet. Put another way, the utility eliminates pipe branch records for any sizes that are outside the permissible NPD rule for the corresponding piping specification.
- The utility can clean only one branch sheet at a time.
- The utility edits the branch sheet and reports results in a log file.

Limitations

- The utility does not remove duplicate records from the branch tables.
- The **Pipe Branch** and **Pipe Nominal Diameters** sheets must exist in separate workbooks. One way to set this up is to open the piping specification workbook, and perform a cut-and-paste operation on the **Pipe Nominal Diameters** sheet into another workbook. The specification workbook has the branch sheet in it. After the process is over, copy the nominal diameters sheet back into the specification workbook.

For assistance with translating your PDS data, contact Intergraph Process, Power & Marine Support.

See Also

Use the Pipe Branch Cleanup Utility (on page 65)

Use the Pipe Branch Cleanup Utility

IMPORTANT

- Before running the Pipe Branch Cleanup utility, you must convert at least one PDS specification using the PDS translator. The conversion results in one specification workbook and one catalog workbook per spec.
- For branch cleanup, the **Pipe Branch** and **Pipe Nominal Diameters** sheets must be in separate workbooks.

1. In Windows Explorer, navigate to the software installation folder.
2. Under [*Product Folder*]\CatalogData\PDSTranslator\Bin, double-click **PipeBranchCleanupUtility.exe**.

   TIP The Workstation setup includes the PDSTranslator folder only if you have specified the Project Management option during installation.
3. In the **PipeBranch Excel file** box, browse and select the Excel workbook (.XLS format) that contains the **Pipe Branch** sheet.
4. In the **PipeNominalDiameters** box, browse and select the Excel workbook (.XLS format) that contains the **Pipe Nominal Diameters** sheet.
5. In the **Log file** box, browse to the location where you want the log file stored.

6. Click **Start Cleanup**. As the utility processes the files, you can view the status messages on the dialog box. After completion, "Finished" appears on the dialog box.

NOTES

- The process overwrites the Excel Pipe Branch workbook.
- The process does not mark any records in the workbook as changed.

See Also

Using the Pipe Branch Cleanup Utility (on page 64)

Pipe Branch Cleanup Utility

This utility cleans pipe branch data after translation. It eliminates records from the **Pipe Branch** sheet for any sizes that are outside the permissible NPD rule for the corresponding piping specification.

For assistance with translating your PDS data, contact Intergraph Process, Power & Marine Support.

PipeBranch Excel file

Specifies the Excel workbook (.XLS format) that contains the **Pipe Branch** sheet.

PipeNominalDiameters

Specifies the Excel workbook (.XLS format) that contains the **Pipe Nominal Diameters** sheet.

Log file

Specifies the log file that provides the results of the process.

Start Cleanup

Starts the process. The utility saves the data upon completion of the process.

See Also

Using the Pipe Branch Cleanup Utility (on page 64)
Use the Pipe Branch Cleanup Utility (on page 65)

Using the Piping Reference Data Merge Utility

The Piping Reference Data Merge utility is a tool for merging translated PDS reference data.

Here are some important points to remember about this utility.

- The utility does not support the merging of specification workbooks.
- The utility can merge as many catalog (part) workbooks as required.
- The utility merges the workbooks and reports results in a log file.

For assistance with translating your PDS data, contact Intergraph Process, Power & Marine Support.

See Also

Use the Piping Reference Data Merge Utility (on page 67)

Use the Piping Reference Data Merge Utility

IMPORTANT Before running the Piping Reference Data Merge utility, you must convert at least two PDS specifications using the PDS translator. The conversion results in one specification workbook and one catalog workbook per spec. The Piping Reference Data Merge utility merges catalog (part) workbooks.

1. In Windows Explorer, navigate to the software installation folder.
2. Under [*Product Folder*]\CatalogData\PDSTranslator\Bin, double-click **PipingReferenceDataMergeUtility.exe**.

   TIP The Workstation setup includes the PDSTranslator folder only if you have specified the Project Management option during installation.
3. In the **Input Excel Files location** box, browse and select the location that stores the files to merge.
4. In the **Output Excel file** box, browse and select the Excel workbook (.XLS format) that will contain the merged data.
5. In the **Log file** box, browse to the location where you want the log file stored.
6. Click **Start**. As the utility processes the files, you can view the status messages on the dialog box. After completion, "Finished" appears on the dialog box.

NOTES

- The output workbook includes a **Sheet1** worksheet. You can remove this sheet and save the workbook before bulk loading. Not removing it does not impact the load, although a message is printed in the log file.
- Worksheets unique to a specific source workbook are copied to the new output workbook.
- In the case of worksheets that are common to all the input workbooks, unique data records (rows) are included in the output.
- In the case of worksheets that are common to all input workbooks, if data is duplicated, then the data from the first worksheet is taken. The utility ignores duplicate data from the subsequent common worksheets.

See Also

Using the Piping Reference Data Merge Utility (on page 66)

Piping Reference Data Spreadsheet Merge Utility

This utility merges translated catalog (part data) workbooks into one workbook.

For assistance with translating your PDS data, contact Intergraph Process, Power & Marine Support.

Input Excel Files location

Specifies the location of the workbooks that you want to merge.

Output Excel file

Specifies the single Excel workbook that will contain all merged data.

Log file

Specifies the log file that provides the results of the process.

Start

Starts the process.

See Also

Using the Piping Reference Data Merge Utility (on page 66)
Use the Piping Reference Data Merge Utility (on page 67)

Using the UoM Conversion Utility

The UoM Conversion utility is a tool for converting imperial part catalog data to its metric equivalent. For example, you can convert values in inches to values in millimeters.

This utility can also convert metric part catalog data to its imperial equivalent.

Here are some important points to remember about this utility.

- The utility does not support the conversion of specification sheets.
- The utility can only convert one catalog workbook at a time.
- The utility processes all sheets in the catalog workbook and reports results in a log file.

Limitations

- The utility does not convert metric files to imperial equivalents, unless you revise the delivered NPD Equivalence Rule workbook so that it has metric units as the primary units of measure and the equivalent imperial units of measure as the secondary units of measure.
- The utility only converts dimensional parameters. It does not convert weights, densities, or any other unit-based properties in the workbooks. Also, part schedule thicknesses and generic data are not converted.
- All data in the part classes must be in the same units. For example, all parts must be in inches or in mm.
- Running the conversion twice ruins the data. The translator maps sizes regardless of the units or changes due to any prior conversion.

For assistance with translating your PDS data, contact Intergraph Process, Power & Marine Support.

See Also

Use the UoM Conversion Utility (on page 68)

Use the UoM Conversion Utility

★ IMPORTANT

- Before running the UoM Conversion utility, you must convert at least one PDS specification using the PDS translator. The conversion results in one specification workbook and one catalog workbook per spec.
- If you have input data in more than one workbook, you can merge the data into one workbook using the Piping Reference Data Merge utility. The UoM Conversion utility must have the input data in one workbook.

1. In Windows Explorer, navigate to the software installation folder.
2. Under [*Product Folder*]\CatalogData\PDSTranslator\Bin, double-click **UoMConversion.exe**.

TIP The Workstation setup includes the PDSTranslator folder only if you have specified the Project Management option during installation.

3. In the **Piping Parts Excel file** box, browse and select the Excel workbook with the piping part data to convert.
4. In the **NPD Equivalence Rule Excel file** box, browse and select the Excel workbook with the rule data.

   TIPS

   - A default NPD Equivalence Rule workbook is delivered in the [*Product Folder*]\Core\Shared\UOMServices\xls folder. This file helps convert units from imperial (inches) to metric (mm).
   - You must remove the Read-only property on the NPD Equivalence Rule workbook before running the conversion process.
   - If you want to convert units from metric (mm) to imperial (inches), you must revise the delivered NPD Equivalence Rule workbook.
5. In the **Log file** box, browse to the location where you want the log file stored.
6. Click **Start Convert**. As the utility processes the files, you can view the status messages on the dialog box. After completion, "Finished" appears on the dialog box.

See Also

Using the UoM Conversion Utility (on page 68)

UoM Conversion Utility

This utility converts the units of measure in translated piping part reference data.

For assistance with translating your PDS data, contact Intergraph Process, Power & Marine Support.

Piping Parts Excel file

Specifies the workbook with the units that you want to convert.

NPD Equivalence Rule Excel file

Specifies the workbook that contains the NPD rule data used in the conversion process. A default NPD Equivalence Rule workbook is delivered in the [*Product* Folder]*Core**Shared**UOM*Services\xls folder. This file helps convert units from imperial (inches) to metric (mm).

If you want to convert units from metric (mm) to imperial (inches), you must revise the delivered NPD Equivalence Rule workbook.

Log file

Specifies the log file that provides the results of the process.

Start Convert

Starts the process.

See Also

Using the UoM Conversion Utility (on page 68)
Use the UoM Conversion Utility (on page 68)

Using the OD to NPD Utility

The OD to NPD utility is a tool for determining the NPD from the Plain Piping Generic Data using the OD, End Standard, and Schedule (OD Reihe number). The utility adds the NPD values for DIN male fittings to the piping catalog workbook.

For assistance with translating your PDS data, contact Intergraph Process, Power & Marine Support.

See Also

Use the OD to NPD Utility (on page 70)

Use the OD to NPD Utility

IMPORTANT Before running the OD to NPD utility, you must convert at least one PDS specification using the PDS translator. The conversion results in one specification workbook and one catalog workbook per spec.

1. In Windows Explorer, navigate to the software installation folder.
2. Under [*Product Folder*]\CatalogData\PDSTranslator\Bin, double-click **ODtoNPD.exe**.

   TIP The Workstation setup includes the PDSTranslator folder only if you have specified the Project Management option during installation.
3. In the **Piping Catalog Excel file** box, browse and select the piping catalog workbook (.xls format).
4. In the **PDS Model Code Rule Excel file** box, browse and select the PDS model code rule workbook (.xls format).
5. In the **Log file** box, browse to specify the log file for the conversion process.
6. Click **Start Convert**. As the utility processes the files, you can view the status messages on the dialog box. After completion, "Finished" appears on the dialog box.

See Also

Using the OD to NPD Utility (on page 70)

OD to NPD Utility

This utility determines the NPD from the Plain Piping Generic Data using the OD, End Standard, and Schedule (OD Reihe number). The utility adds NPD values for DIN male fittings to the piping catalog workbook.

For assistance with translating your PDS data, please contact Intergraph Support. You can find support information on our web site: http://support.intergraph.com

Piping Catalog Excel file

Specifies the piping catalog Excel workbook (.xls format), which contains the Plain Piping Generic Data.

PDS Model Code Rule Excel file

Specifies the Excel workbook (.xls format) that contains the PDS model code rules.

Log file

Specifies the log file that provides the results of the process.

Start Convert

Starts the process. The utility saves the data upon completion of the process.

See Also

Using the OD to NPD Utility (on page 70)
Use the OD to NPD Utility (on page 70)

APPENDIX A

Appendix: Importer Workbooks

The **File > Import** commands use the Microsoft Excel workbooks delivered in the [*Product Folder*]\Translators\ConfigurationFiles folder to map to XML file attribute tags to the correct Smart 3D properties. You can use the delivered configuration files without editing if you have not customized any of the Smart 3D "out-of-the- box" properties. However, if you have customized Smart 3D properties, you must edit the workbooks to match your changes.

The delivered sample workbooks are:

- ElectricalTranslationMap.xls - For more information, see *Electrical Translation Map* (on page 72).
- EQPTranslationMap.xls - For more information, see *Equipment Translation Map* (on page 75).
- HS_System.xls - For more information, see *Hangers Translation Map* (on page 84).
- HVACTranslationMap.xls - For more information, see *HVAC Translation Map* (on page 84).
- PipingTranslationMap.xls - For more information, see *Piping Translation Map* (on page 86).

Electrical Translation Map

The **ElectricalTranslationMap.xls** delivered in the *[Product Folder]*\Translators\ConfigurationFiles folder maps electrical XML file attribute tags to the correct Smart 3D properties.

The **CableTraySpec** and **ConduitSpec** sheets map specification names between the XML file and Smart 3D. For more information, see *CableTraySpec* (on page 73) and *ConduitSpec* (on page 73).

The **Generic-ItemCode-Map** sheet serves as a generic map between a given ItemCode (AABBCC code in PDS) to Smart 3D short Code/Tag. Ideally, all short codes should be kept common across specs. For more information, see *Generic-ItemCode-Map* (on page 73).

The **Spec-Specific-ItemCode-Map** sheet serves as a specific overriding map per spec (above the Generic map) between a given ItemCode (AABBCC code in PDS) to Smart 3D short code/Tag. This is only to be used if some spec has a different short codes used on Smart 3D side, different than the generic mapping the Generic-ItemCode-Map sheet provides. For more information, see *Spec-Specific-ItemCode-Map* (on page 74).

The **CableTrayUA**, **CableTrayFittingUA**, **CableTrayFittingPortUA**, **CableTrayStraightUA**, **CableTrayStraightPortUA**, **ConduitRunUA**, **ConduitRunFittingUA**, **ConduitRunFittingPortUA**, **ConduitRunStraightUA**, and **ConduitRunStraightPortUA** sheets are used to map user attributes specified in the XML file to user attributes under the respective elements. For more information, see *Electrical User Attribute Sheets* (on page 74).

See Also

CableTraySpec (on page 73)
ConduitSpec (on page 73)
Generic-ItemCode-Map (on page 73)

Spec-Specific-ItemCode-Map (on page 74)
Electrical User Attribute Sheets (on page 74)

CableTraySpec

The **CableTraySpec** sheet of the **ElectricalTranslationMap.xls** workbook maps cable tray specification names between the .xml file and Smart 3D.

XML Spec - Enter the cable tray specification name that appears in the .xml file.

NOTE If the **XML spec** is not mapped in the **CableTraySpec** mapping sheet, then the PDS software assumes that the specification is present in Smart 3D. The software then tries to import the electrical run with that specification.

S3D Spec - Enter the cable tray specification name to map to in Smart 3D.

See Also

Electrical Translation Map (on page 72)

ConduitSpec

The **ConduitSpec** sheet of the **ElectricalTranslationMap.xls** workbook maps conduit specification names between the XML file and Smart 3D.

XML Spec - Enter the conduit specification name that appears in the XML file.

NOTE If the **XML Spec** is not mapped in the **ConduitSpec** mapping sheet, then the PDS software assumes that the specification is present in Smart 3D. The software then tries to import the electrical run with that specification.

S3D Spec - Enter the conduit specification name to map to in Smart 3D.

See Also

Electrical Translation Map (on page 72)

Generic-ItemCode-Map

The **Generic-ItemCode-Map** sheet of the **ElectricalTranslationMap.xls** workbook is a generic map between a given ItemCode (AABBCC code in PDS) to Smart 3D short Code/Tag. Ideally, all short codes should be kept common across specs. You cannot relocate or rename the columns in the ItemCode related worksheets.

Component ItemCode - Enter the PDS commodity name. Do not change existing entries in this column. Add new entries to the bottom.

S3D Short Code - Enter the corresponding short code that is available in the Smart 3D specification. Leave this column blank if you want to map the component ItemCode directly to a tag number in the next column.

S3D Tag Number - Enter the tag number to map the component ItemCode. You must leave the short code column blank if you define a tag number.

Is Specifically Placed - Specify if the item is specifically placed (Y) or it implied by the route (N). Examples specifically placed items (Y) are: couplings, plugs, unions. Examples of implied items (N) are: conduits, elbows, and tees.

Object Type - Enter the geometry object type code.

Object Type	Code
Branch	2
End	3
Transition	4
Straight	5
Turn	6

Is Rotation Applicable - Enter **Y** if the component can be rotated.

Port # to use as S3D Location - Enter the port number which corresponds to the location of the component. Enter **0** if it is the origin.

See Also
Electrical Translation Map (on page 72)

Spec-Specific-ItemCode-Map

The **Spec-Specific-ItemCode-Map** sheet of the **ElectricalTranslationMap.xls** workbook is a specific overriding map per conduit specifications (above the Generic map) between a given ItemCode (AABBCC code in PDS) to Smart 3D ShortCode/Tag. This is only to be used if some conduit specification has a different ShortCodes used on Smart 3D side, different than the generic mapping the Generic-ItemCode-Map sheet provides. For more information, see *Generic-ItemCode-Map* (on page 73).

Conduit Spec - Enter the conduit specification name for which you want to define an override.

Component ItemCode - Enter the PDS commodity name to override. This commodity name must already be in the **Gneric-ItemCode-Map** sheet.

S3D Short Code - Enter the corresponding short code that is available in the conduit specification.

See Also
Electrical Translation Map (on page 72)

Electrical User Attribute Sheets

The user attribute sheets (the sheets with names that end with UA) of the **ElectricalTranslationMap.xls** workbook map electrical user attributes defined in the XML file to user attributes in the software.

Attribute Name in XML - Enter the attribute name in the XML file to map.

S3D Attribute Interface - Enter the Smart 3D user attribute interface name. You can find this information on the **CustomInterfaces** sheet of your catalog workbook in column B, **InterfaceName**.

S3D Attribute Name - Enter the Smart 3D user attribute name. You can find this information on the **CustomInterfaces** sheet of your catalog workbook in column D, **AttributeName**.

See Also
Electrical Translation Map (on page 72)

Equipment Translation Map

The **EQPTranslationMap.xls** workbook delivered in the *[Product Folder]*\Translators\ConfigurationFiles folder maps equipment XML file attribute tags to the correct Smart 3D properties.

The **XMLEquipmentItem-SheetName-Map** sheet is a lookup reference between an equipment item name in the input XML file and the corresponding sheet name in the **EQPTranslationMap.xls** workbook. For more information, see *XML Equipment Item Sheet Name Map Sheet* (on page 83).

The **DesignEQPPartClassMap** sheet is a lookup reference between a design equipment part class attribute in the XML file and the corresponding Smart 3D equivalent part class attribute. If this sheet is missing or if design equipment's part class attribute in the XML file does not have a mapped entry in the sheet, then the part class attribute specified in the XML file is used as the Smart 3D part class for that designed equipment. An appropriate warning is given in the import log file that no mapping sheet or mapping entry was defined. For more information, see *Design Equipment Part Class Map Sheet* (on page 76).

Other sheets represent shapes, nozzles and custom shapes, parametrics, and attribute map information sheets. These sheets serve as a map between the equipment items in the XML file and Smart 3D equipment items.

The **ShapesAndNozzles** sheet maps the XML file item name to the Smart 3D part class and part number for primitives (shapes and nozzles) and custom shapes. For more information, see *Shapes and Nozzles Sheet* (on page 79).

The PartClass Sheets, similar to Template-Item-Sheet, serve a map for XML ItemName to S3D PartClass/ S3D PartNumber for Parametrics and Catalog Equipment.

Attribute Map Info Sheets, similar to Template-AttMap-Sheet, serve as a map for XML Item Attribute Name to S3D Attribute Name for Primitives> Nozzles > CustomShapes > Parametrics> Catalog Equipment.

To define a new part class item mapping, do the following:

1. Copy the **Template-Item-Sheet**, and then name it after the Smart 3D item name.
2. Fill in the details in the appropriate columns.
3. Copy the **Template-AttMap-Sheet**, and then name it after the value in the **Attribute Mapping Sheet** cell.
4. Add a new entry to the **XMLEquipmentItem-SheetName-Map** sheet.
5. Specify the **Equipment Item Name** in the XML file and the corresponding sheet name created in step 1.

To define a new custom shape mapping, do the following:

1. Add a new entry to the **ShapesAndNozzles** sheet.
2. Specify the custom shape's part number used in the XML file in the **Item Name in XML** column, and then fill in the mapping details, such as S3D PartClass, S3D PartNumber, and Attribute Mapping Sheet.
3. Copy the **Template-AttMap-Sheet**, and name the value in the **Attribute Mapping Sheet** cell.

4. In the **Attribute Mapping Sheet**, define the mapping attribute for the custom shape's attributes.

NOTE Usually, the part class and part numbers for equipment components and catalog equipment are different. For example, E205Asm and E205_1_Asm are the catalog equipment part classes and part numbers, whereas E205_CVerCylEqpSkCompAsm and E205-Vertical Tank with Skirt (multi-stage)_Asm are the equipment component part classes and part numbers. Therefore, consider this fact when define the mapping sheets.Therefore, be careful when defining the mapping sheets.

See Also

Design Equipment Part Class Map Sheet (on page 76)
Electrical Lighting Fixtures Sheet (on page 77)
PDS Equipment Parametrics Sheet (on page 78)
Shapes and Nozzles Sheet (on page 79)
S3D Heat Transfer Equipment Sheet (on page 79)
S3D Mechanical Equipment Sheet (on page 80)
S3D Vessels Sheet (on page 81)
Template AttMap Sheet (on page 82)
Template Item Sheet (on page 83)
XML Equipment Item Sheet Name Map Sheet (on page 83)

Design Equipment Part Class Map Sheet

The **DesignEQPPartClassMap** sheet in the **EQPTranslationMap.xls** workbook is a lookup reference between a design equipment part class attribute in the XML file and the corresponding Smart 3D equivalent part class attribute. If this sheet is missing or if a design equipment part class attribute in XML does not have a mapping entry in the sheet, then the part class attribute specified in the XML file is used as Smart 3D part class for that designed equipment. A warning is written to the import log file to let you know that no mapping sheet or mapping entry was defined. Define parametric and catalog equipment lookup references on *XML Equipment Item Sheet Name Map Sheet* (on page 83).

Design Equipment Part Class Attribute in XML - Enter the XML file design equipment part class attribute to map.

S3D Equivalent Design Equipment Part Class - Enter the Smart 3D design equipment part class to which to map the XML part class attribute.

Adjustment Rotation Matrix - Specify the adjustment rotation to apply on the XML item's orientation to make it the equivalent Smart 3D orientation after placement if there is a coordinate system difference between the XML item and the Smart 3D part. You can leave this field blank if there is no coordinate system difference. Verify that the data specified is correct. Invalid data might cause unexpected results.

For example, consider that the XML parametric of equipment E215 in its native application is defined with a local Coordinate system as [0,0,1] [1,0,0] [0,1,0], that is X-UP, Y- East, and Z-North. Whereas the Smart 3D equivalent part has its symbol code based on a local coordinate system of [1,0,0] [0,1,0] [0,0,1], that is X-East, Y-North, and Z-UP. For this E215 case, you can specify an Adjustment Rotation Matrix which when applied on the input orientation (from the XML file) would give the output orientation to use (in Smart 3D symbol). Therefore, by specifying the Adjustment Rotation Matrix as [0,1,0] [0,0,-1] [-1,0,0] you can get the equivalent part orientation.

See Also

Equipment Translation Map (on page 75)

Electrical Lighting Fixtures Sheet

The **ElectricalLightingFixtures** sheet in the **EQPTranslationMap.xls** workbook maps electrical equipment defined in the XML file to Smart 3D electrical equipment.

Item Name in XML - Enter the XML electrical equipment item name to map.

S3D Part Class - Enter the Smart 3D part class name to which to map the XML item name.

S3D Part Number - Enter the Smart 3D part number to which to map the XML item name.

Attribute Mapping Sheet - Enter the workbook sheet name in this workbook that maps the XML part number attributes to the Smart 3D part number attributes. Always use the **Template-AttMap-Sheet** as the template when creating these attribute mapping sheets.

Adjustment Rotation Matrix - Specify the adjustment rotation to apply on the XML item's orientation to make it the equivalent Smart 3D orientation after placement if there is a coordinate system difference between the XML item and the Smart 3D part. You can leave this field blank if there is no coordinate system difference. Verify that the data specified is correct. Invalid data might cause unexpected results.

For example, consider that the XML parametric of equipment E215 in its native application is defined with a local Coordinate system as [0,0,1] [1,0,0] [0,1,0], that is X-UP, Y- East, and Z-North. Whereas the Smart 3D equivalent part has its symbol code based on a local coordinate system of [1,0,0] [0,1,0] [0,0,1], that is X-East, Y-North, and Z-UP. For this E215 case, you can specify an Adjustment Rotation Matrix which when applied on the input orientation (from the XML file) would give the output orientation to use (in Smart 3D symbol). Therefore, by specifying the Adjustment Rotation Matrix as [0,1,0] [0,0,-1] [-1,0,0] you can get the equivalent part orientation.

See Also

PDS Equipment Parametrics Sheet

The **PDS-EQP-Parametrics** sheet in the **EQPTranslationMap.xls** Microsoft Excel workbook maps PDS parametric equipment defined in the XML file to Smart 3D parametric equipment.

Item Name in XML - Enter the XML equipment item name to map.

S3D Part Class - Enter the Smart 3D part class name to which to map the XML item name.

S3D Part Number - Enter the Smart 3D part number to which to map the XML item name.

Attribute Mapping Sheet - Enter the workbook sheet name in this workbook that maps the XML part number attributes to the Smart 3D part number attributes. You should use the **Template-AttMap-Sheet** as the template when creating these attribute mapping sheets.

Sub Mapping Sheet - If more than one Smart 3D can be mapped to this XML parametric, then you must specify the corresponding **Sub Mapping Sheet** in this field. You can leave this field blank if only one Smart 3D is mapped to the parametric. However, if the field is not blank, then the data specified on this sheet and that corresponds to the mapped parametric is ignored. Instead, the software only considers the data specified in the corresponding **SubMap** sheet.

NOTE The software uses the text value in this field and not the sheet that the hyperlink points to.

Type - Fill in this field with Type information, such as Shape, Piping_Nozzle, Elbow_Piping_Nozzle, or CatalogEquipment. However, you may type this information in the field only if the software imports the PDS parametric as an equivalent Smart 3D shape, nozzle, or catalog equipment. Alternately, if you leave this field blank, then the software considers the PDS parametric as normal.

NOTE The **Type** field can also take the same values as the **Type** column, located on the **ShapesAndNozzles** sheet.

Adjustment Rotation Matrix - Specify the adjustment rotation to apply on the XML item's orientation to make it the equivalent Smart 3D orientation after placement if there is a coordinate system difference between the XML item and the Smart 3D part. You can leave this field blank if there is no coordinate system difference. Verify that the data specified is correct. Invalid data might cause unexpected results.

For example, consider that the XML parametric of equipment E215 in its native application is defined with a local Coordinate system as [0,0,1] [1,0,0] [0,1,0], that is X-UP, Y- East, and Z-North. Whereas the Smart 3D equivalent part has its symbol code based on a local coordinate system of [1,0,0] [0,1,0] [0,0,1], that is X-East, Y-North, and Z-UP. For this E215 case, you can specify an Adjustment Rotation Matrix which when applied on the input orientation (from the XML file) would give the output orientation to use (in Smart 3D symbol). Therefore, by specifying the Adjustment Rotation Matrix as [0,1,0] [0,0,-1] [-1,0,0] you can get the equivalent part orientation.

See Also

Equipment Translation Map (on page 75)
Design Equipment Part Class Map Sheet (on page 76)
Electrical Lighting Fixtures Sheet (on page 77)
PDS Equipment Parametrics Sheet (on page 78)
Shapes and Nozzles Sheet (on page 79)
S3D Heat Transfer Equipment Sheet (on page 79)
S3D Mechanical Equipment Sheet (on page 80)
S3D Vessels Sheet (on page 81)
Template AttMap Sheet (on page 82)

Template Item Sheet (on page 83)
XML Equipment Item Sheet Name Map Sheet (on page 83)

Shapes and Nozzles Sheet

The **ShapesAndNozzles** sheet in the **EQPTranslationMap.xls** Microsoft Excel workbook maps the XML file item name to the Smart 3D part class and part number for primitives (shapes and nozzles) and custom shapes.

Item Name in XML - Enter the XML shape or nozzle item name to map.

S3D Part Class - Enter the Smart 3D part class name to which to map the XML item name.

S3D Part Number - Enter the Smart 3D part number to which to map the XML item name.

Attribute Mapping Sheet - Enter the workbook sheet name in this workbook that maps the XML part number attributes to the Smart 3D part number attributes. You should use the **Template-AttMap-Sheet** as the template when creating these attribute mapping sheets.

Type - Enter the type. You can enter SHAPE, PIPE_NOZZLE, ELBOW_PIPE_NOZZLE, xxxx_NOZZLE, or CUSTOMSHAPE.

Adjustment Rotation Matrix - Specify the adjustment rotation to apply on the XML item's orientation to make it the equivalent Smart 3D orientation after placement if there is a coordinate system difference between the XML item and the Smart 3D part. You can leave this field blank if there is no coordinate system difference. Verify that the data specified is correct. Invalid data might cause unexpected results.

For example, consider that the XML parametric of equipment E215 in its native application is defined with a local Coordinate system as [0,0,1] [1,0,0] [0,1,0], that is X-UP, Y- East, and Z-North. Whereas the Smart 3D equivalent part has its symbol code based on a local coordinate system of [1,0,0] [0,1,0] [0,0,1], that is X-East, Y-North, and Z-UP. For this E215 case, you can specify an Adjustment Rotation Matrix which when applied on the input orientation (from the XML file) would give the output orientation to use (in Smart 3D symbol). Therefore, by specifying the Adjustment Rotation Matrix as [0,1,0] [0,0,-1] [-1,0,0] you can get the equivalent part orientation.

See Also

Equipment Translation Map (on page 75)
Design Equipment Part Class Map Sheet (on page 76)
Electrical Lighting Fixtures Sheet (on page 77)
PDS Equipment Parametrics Sheet (on page 78)
Shapes and Nozzles Sheet (on page 79)
S3D Heat Transfer Equipment Sheet (on page 79)
S3D Mechanical Equipment Sheet (on page 80)
S3D Vessels Sheet (on page 81)
Template AttMap Sheet (on page 82)
Template Item Sheet (on page 83)
XML Equipment Item Sheet Name Map Sheet (on page 83)

S3D Heat Transfer Equipment Sheet

The **S3DHeatTransferEQP** sheet in the **EQPTranslationMap.xls** Microsoft Excel workbook maps heat transfer equipment defined in the XML file to Smart 3D heat transfer equipment.

Item Name in XML - Enter the XML equipment item name to map.

S3D Part Class - Enter the Smart 3D part class name to which to map the XML item name.

S3D Part Number - Enter the Smart 3D part number to which to map the XML item name.

Attribute Mapping Sheet - Enter the workbook sheet name in this workbook that maps the XML part number attributes to the Smart 3D part number attributes. You should use the **Template-AttMap-Sheet** as the template when creating these attribute mapping sheets.

Adjustment Rotation Matrix - Specify the adjustment rotation to apply on the XML item's orientation to make it the equivalent Smart 3D orientation after placement if there is a coordinate system difference between the XML item and the Smart 3D part. You can leave this field blank if there is no coordinate system difference. Verify that the data specified is correct. Invalid data might cause unexpected results.

For example, consider that the XML parametric of equipment E215 in its native application is defined with a local Coordinate system as [0,0,1] [1,0,0] [0,1,0], that is X-UP, Y- East, and Z-North. Whereas the Smart 3D equivalent part has its symbol code based on a local coordinate system of [1,0,0] [0,1,0] [0,0,1], that is X-East, Y-North, and Z-UP. For this E215 case, you can specify an Adjustment Rotation Matrix which when applied on the input orientation (from the XML file) would give the output orientation to use (in Smart 3D symbol). Therefore, by specifying the Adjustment Rotation Matrix as [0,1,0] [0,0,-1] [-1,0,0] you can get the equivalent part orientation.

See Also

Equipment Translation Map (on page 75)
Design Equipment Part Class Map Sheet (on page 76)
Electrical Lighting Fixtures Sheet (on page 77)
PDS Equipment Parametrics Sheet (on page 78)
Shapes and Nozzles Sheet (on page 79)
S3D Heat Transfer Equipment Sheet (on page 79)
S3D Mechanical Equipment Sheet (on page 80)
S3D Vessels Sheet (on page 81)
Template AttMap Sheet (on page 82)
Template Item Sheet (on page 83)
XML Equipment Item Sheet Name Map Sheet (on page 83)

S3D Mechanical Equipment Sheet

The **S3DMechanicalEQP** sheet in the **EQPTranslationMap.xls** Microsoft Excel workbook maps mechanical equipment defined in the XML file to Smart 3D mechanical equipment.

Item Name in XML - Enter the XML equipment item name to map.

S3D Part Class - Enter the Smart 3D part class name to which to map the XML item name.

S3D Part Number - Enter the Smart 3D part number to which to map the XML item name.

Attribute Mapping Sheet - Enter the workbook sheet name in this workbook that maps the XML part number attributes to the Smart 3D part number attributes. You should use the **Template-AttMap-Sheet** as the template when creating these attribute mapping sheets.

Adjustment Rotation Matrix - Specify the adjustment rotation to apply on the XML item's orientation to make it the equivalent Smart 3D orientation after placement if there is a coordinate system difference between the XML item and the Smart 3D part. You can leave this field blank if there is no coordinate system difference. Verify that the data specified is correct. Invalid data might cause unexpected results.

For example, consider that the XML parametric of equipment E215 in its native application is defined with a local Coordinate system as [0,0,1] [1,0,0] [0,1,0], that is X-UP, Y- East, and

Z-North. Whereas the Smart 3D equivalent part has its symbol code based on a local coordinate system of [1,0,0] [0,1,0] [0,0,1], that is X-East, Y-North, and Z-UP. For this E215 case, you can specify an Adjustment Rotation Matrix which when applied on the input orientation (from the XML file) would give the output orientation to use (in Smart 3D symbol). Therefore, by specifying the Adjustment Rotation Matrix as [0,1,0] [0,0,-1] [-1,0,0] you can get the equivalent part orientation.

See Also

Equipment Translation Map (on page 75)
Design Equipment Part Class Map Sheet (on page 76)
Electrical Lighting Fixtures Sheet (on page 77)
PDS Equipment Parametrics Sheet (on page 78)
Shapes and Nozzles Sheet (on page 79)
S3D Heat Transfer Equipment Sheet (on page 79)
S3D Mechanical Equipment Sheet (on page 80)
S3D Vessels Sheet (on page 81)
Template AttMap Sheet (on page 82)
Template Item Sheet (on page 83)
XML Equipment Item Sheet Name Map Sheet (on page 83)

S3D Vessels Sheet

The **S3D Vessels** sheet in the **EQPTranslationMap.xls** Microsoft Excel workbook maps vessels defined in the XML file to Smart 3D vessels.

Item Name in XML - Enter the XML vessel item name to map.

S3D Part Class - Enter the Smart 3D part class name to which to map the XML item name.

S3D Part Number - Enter the Smart 3D part number to which to map the XML item name.

Attribute Mapping Sheet - Enter the workbook sheet name in this workbook that maps the XML part number attributes to the Smart 3D part number attributes. You should use the **Template-AttMap-Sheet** as the template when creating these attribute mapping sheets.

Adjustment Rotation Matrix - Specify the adjustment rotation to apply on the XML item's orientation to make it the equivalent Smart 3D orientation after placement if there is a coordinate system difference between the XML item and the Smart 3D part. You can leave this field blank if there is no coordinate system difference. Verify that the data specified is correct. Invalid data might cause unexpected results.

For example, consider that the XML parametric of equipment E215 in its native application is defined with a local Coordinate system as [0,0,1] [1,0,0] [0,1,0], that is X-UP, Y- East, and Z-North. Whereas the Smart 3D equivalent part has its symbol code based on a local coordinate system of [1,0,0] [0,1,0] [0,0,1], that is X-East, Y-North, and Z-UP. For this E215 case, you can specify an Adjustment Rotation Matrix which when applied on the input orientation (from the XML file) would give the output orientation to use (in Smart 3D symbol). Therefore, by specifying the Adjustment Rotation Matrix as [0,1,0] [0,0,-1] [-1,0,0] you can get the equivalent part orientation.

See Also

Equipment Translation Map (on page 75)
Design Equipment Part Class Map Sheet (on page 76)
Electrical Lighting Fixtures Sheet (on page 77)
PDS Equipment Parametrics Sheet (on page 78)
Shapes and Nozzles Sheet (on page 79)

Template AttMap Sheet

The **Template-AttMap-Sheet** sheet in the **EQPTranslationMap.xls** Microsoft Excel workbook is a template to use to map XML attributes to Smart 3D attribute interfaces and attribute names. Copy this sheet to a new sheet for each item that you want to map. It is recommended that you name the new sheet after the Smart 3D part class and number.

Attribute Name in XML - Enter the XML attribute name to map. This name must be unique on this sheet. If you have an XML attribute that is not used in Smart 3D but is used in a calculation of another attribute, leave the **S3D Attribute Interface** and **S3D Attribute Name** columns blank for that XML attribute. If you have more Smart 3D attributes than input XML attributes, enter a dummy XML attribute name in this column and then define the correct S3D attribute interface and attribute name in those columns.

S3D Attribute Interface - Enter the name of the Smart 3D attribute interface to which to map the XML attribute.

S3D Attribute Name - Enter the name of the Smart 3D attribute to which to map the XML attribute. This attribute name must exist in the attribute interface that you defined in the previous column.

Unit Type of this Attribute Value in XML - If you do not use formulae in mapping, then leave this field blank. This field is only necessary to make sure formula work on standard Smart 3D internal values (like 0.15675m) and not on formatted values (like 1' 3 5/8"). You must ensure that all attributes involved in calculations are specified with the correct unit type. If you want the software to use an XML attribute value as it is in the calculation, you can leave this field blank.

Instance values of XML attributes used to evaluate formulae defined in next Column - Assume that for each equipment item instance, the values from the XML file are parsed (according to its data type specified in previous column) and entered into these fields. Then the formulae are evaluated and the newly calculated attribute values are used in import.

Define Formulae based on XML attribute values in previous Column to calculate the S3D attribute value - If you do not use formulae in mapping, then leave this field blank. The formula will use the instance values in previous column and calculate the corresponding Smart 3D attribute values. The formulae can even refer to some other columns or sheets and need not be restricted to the XML instance variables in column F. If you want to debug your formulae in this mapping sheet at runtime, type DEBUG=true in this field.

See Also

Template Item Sheet (on page 83)
XML Equipment Item Sheet Name Map Sheet (on page 83)

Template Item Sheet

The **Template-Item-Sheet** sheet in the **EQPTranslationMap.xls** Microsoft Excel workbook is a template for mapping the XML file item names to the Smart 3D part class and part number. Copy this sheet to a new sheet for each item that you want to map. We recommend that you name the new sheet after the Smart 3D part number.

Part Number Attribute in XML - Enter the part number in the XML file to map.

S3D Part Class - Enter the Smart 3D part class name to which you want to map the XML part number.

S3D Part Number - Enter the Smart 3D part number to which you want to map the XML part number.

Attribute Mapping Sheet - Enter the workbook sheet name in this workbook that maps the XML part number attributes to the Smart 3D part number attributes. You should use the **Template-AttMap-Sheet** as the template when creating these attribute mapping sheets.

Adjustment Rotation Matrix - Specify the adjustment rotation to apply on the XML item's orientation to make it the equivalent Smart 3D orientation after placement if there is a coordinate system difference between the XML item and the Smart 3D part. You can leave this field blank if there is no coordinate system difference. Verify that the data specified is correct. Invalid data might cause unexpected results.

For example, consider that the XML parametric of equipment E215 in its native application is defined with a local Coordinate system as [0,0,1] [1,0,0] [0,1,0], that is X-UP, Y- East, and Z-North. Whereas the Smart 3D equivalent part has its symbol code based on a local coordinate system of [1,0,0] [0,1,0] [0,0,1], that is X-East, Y-North, and Z-UP. For this E215 case, you can specify an Adjustment Rotation Matrix which when applied on the input orientation (from the XML file) would give the output orientation to use (in Smart 3D symbol). Therefore, by specifying the Adjustment Rotation Matrix as [0,1,0] [0,0,-1] [-1,0,0] you can get the equivalent part orientation.

See Also

Equipment Translation Map (on page 75)
Design Equipment Part Class Map Sheet (on page 76)
Electrical Lighting Fixtures Sheet (on page 77)
PDS Equipment Parametrics Sheet (on page 78)
Shapes and Nozzles Sheet (on page 79)
S3D Heat Transfer Equipment Sheet (on page 79)
S3D Mechanical Equipment Sheet (on page 80)
S3D Vessels Sheet (on page 81)
Template AttMap Sheet (on page 82)
Template Item Sheet (on page 83)
XML Equipment Item Sheet Name Map Sheet (on page 83)

XML Equipment Item Sheet Name Map Sheet

The **XMLEquipmentItem-SheetName-Map** sheet in the **EQPTranslationMap.xls** Microsoft Excel workbook is a lookup reference between an equipment item name in the input XML file and the corresponding sheet name in the **EQPTranslationMap.xls** workbook. This lookup

reference is for parametric and catalog equipment. Define design equipment lookup references on *Design Equipment Part Class Map Sheet* (on page 76).

Part Class Attribute in XML - Enter the part class attribute in the XML file. This field must be unique on this sheet.

Lookup Sheet for S3D Equivalent Part Class - Enter the lookup sheet name that contains the equivalent part classes.

See Also

Equipment Translation Map (on page 75)
Design Equipment Part Class Map Sheet (on page 76)
Electrical Lighting Fixtures Sheet (on page 77)
PDS Equipment Parametrics Sheet (on page 78)
Shapes and Nozzles Sheet (on page 79)
S3D Heat Transfer Equipment Sheet (on page 79)
S3D Mechanical Equipment Sheet (on page 80)
S3D Vessels Sheet (on page 81)
Template AttMap Sheet (on page 82)
Template Item Sheet (on page 83)
XML Equipment Item Sheet Name Map Sheet (on page 83)

Hangers Translation Map

The **HS_System.xls** Microsoft Excel workbook delivered in the [*Product Folder*]\CatalogData\Bulkload\Datafiles folder maps hangers and supports XML file attribute tags to the correct Smart 3D properties. For more information about the columns in this workbook, refer to the *Hangers and Supports Reference Data Guide*.

HVAC Translation Map

The **HVACTranslationMap.xls** Microsoft Excel workbook delivered in the *[Product Folder]*\Translators\ConfigurationFiles folder maps HVAC XML file attribute tags to the correct Smart 3D properties.

The *HVACSpec* (on page 85) sheet map specifies

names between the XML file and Smart 3D.

The **CompnentMap** sheet serves as a map between a given ItemCode (AABBCC code in PDS) to Smart 3D part class and part number. Ideally, all short codes should be kept common across specs. For more information, see *ComponentMap* (on page 85).

The **Material** and **Insulation Material** sheets map HVAC materials to Smart 3D materials. For more information, see *Material* (on page 85) and *Insulation Material* (on page 86).

The **DuctRunUA**, **DuctRunFittingUA**, **DuctRunFittingPortUA**, **DuctUA**, **DuctPortUA**, and **DuctRunComponentUA** sheets are used to map user attributes specified in the XML file to user attributes under the respective elements. For more information, see *HVAC User Attribute Sheets* (on page 85).

See Also

ComponentMap (on page 85)
HVACSpec (on page 85)
Insulation Material (on page 86)
Material (on page 85)

HVAC User Attribute Sheets (on page 85)

HVACSpec

The **HVACSpec** sheet of the **HVACTranslationMap.xls** workbook maps HVAC specification names between the XML file and Smart 3D.

XML Spec - Type the HVAC specification name that appears in the XML file.

NOTE If the **XML Spec** is not mapped in this **HVACSpec** mapping sheet, then the PDS software assumes that the specification is present in Smart 3D. The software then tries to import the HVAC run with that specification.

S3D Spec - Type the HVAC specification name to map to in Smart 3D.

See Also

HVAC Translation Map (on page 84)

ComponentMap

The **ComponentMap** sheet of the **HVACTranslationMap.xls** workbook maps a given ItemCode (AABBCC code in PDS) to Smart 3D part class and part number.

XML PartNumber - Enter the PDS commodity name to map.

S3D PartClass - Enter the Smart 3D part class name.

S3D Tag Number - Enter the Smart 3D part number.

See Also

HVAC Translation Map (on page 84)

HVAC User Attribute Sheets

The user attribute sheets (the sheets with names that end with UA) of the **HVACTranslationMap.xls** workbook map user attributes defined in the XML file to user attributes in the software.

Attribute Name in XML - Enter the attribute name in the XML file to map.

S3D Attribute Interface - Enter the Smart 3D user attribute interface name. You can find this information on the **CustomInterfaces** sheet of your piping catalog workbook in column B, **InterfaceName**.

S3D Attribute Name - Enter the Smart 3D user attribute name. You can find this information on the **CustomInterfaces** sheet of your piping catalog workbook in column D, **AttributeName**.

See Also

HVAC Translation Map (on page 84)

Material

The **Material** sheet of the **HVACTranslationMap.xls** workbook maps HVAC materials in the XML file to Smart 3D materials.

XML Material - Enter the PDS HVAC material name to map.

S3D Material - Enter the Smart 3D material name.

See Also
HVAC Translation Map (on page 84)

Insulation Material

The **Insulation Material** sheet of the **HVACTranslationMap.xls** workbook maps HVAC insulation materials in the XML file to Smart 3D materials.

XML Material - Enter the PDS HVAC insulation material name to map.

S3D Material - Enter the Smart 3D insulation material name.

See Also
HVAC Translation Map (on page 84)

Piping Translation Map

The **PipingTranslationMap.xls** Microsoft Excel workbook delivered in the *[Product Folder]*\Translators\ConfigurationFiles folder maps piping XML file attribute tags to the correct Smart 3D properties.

The **PMC-Map** sheet serves as a map between a given Piping Material Class, or PMC, and the Smart 3D Spec.

The **Generic-ItemCode-Map** sheet serves as a generic map between a given ItemCode (AABBCC code in PDS) to Smart 3D short Code / Tag. Ideally, all short codes should be kept common across specs. For more information, see *Generic-ItemCode-Map* (on page 87).

The **PMC-Specific-ItemCode-Map** sheet serves as a specific overriding map per spec (above the Generic map) between a given ItemCode (AABBCC code in PDS) to Smart 3D short code / Tag. This is only to be used if some spec has a different short codes used on Smart 3D side, different than the generic mapping the Generic-ItemCode-Map sheet provides. For more information, see *PMC-Specific-ItemCode-Map* (on page 89).

You cannot relocate or rename the columns in the ItemCode related worksheets.

The **Specialty-Map** sheet provides a map between PDS specialty ItemCodes to Smart 3D specialty tag numbers. For more information, see *Specialty-Map* (on page 90).

The **Instrument-Map** sheet provides a map between PDS instrument ItemCodes to Smart 3D instrument tag numbers. For more information, see *Instrument-Map* (on page 92).

The **Support-Map** sheet provides a default map for all PDS supports to a Smart 3D hanger and support assembly part number. For more information, see *Support-Map* (on page 94).

The **PipeRunUA**, **PipelineSystemUA**, **PipeUA**, **ComponentUA**, **InstrumentUA**, **SupportUA**, and **PortUA** sheets are used to map user attributes specified in the XML file to user attributes under the respective elements. For more information, see *Piping User Attribute Sheets* (on page 94).

See Also
Generic-ItemCode-Map (on page 87)
Instrument-Map (on page 92)
PMC-Specific-ItemCode-Map (on page 89)
Specialty-Map (on page 90)
Support-Map (on page 94)
Piping User Attribute Sheets (on page 94)

PMC-Map

The **PMC-Map** sheet is a map between a given Piping Material Class to the Smart 3D specification.

Piping Material Class - Type the PDS Piping Material Class from the .xml file.

S3D Spec - Type the corresponding Smart 3D piping specification, available under the Piping task in Smart 3D.

NOTE If the **XML Spec** is not mapped in the **PMC-Map** mapping sheet, then the PDS software assumes that the piping specification is present in Smart 3D. The software then tries to import the pipe run with that specification.

Generic-ItemCode-Map

The **Generic-ItemCode-Map** sheet is a generic map between a given ItemCode (AABBCC code in PDS) to Smart 3D short Code / Tag. Ideally, all short codes should be kept common across specs. You cannot relocate or rename the columns in the ItemCode related worksheets.

Component ItemCode - Enter the PDS commodity name. Do not change existing entries in this column. Add new entries to the bottom.

S3D Short Code - Enter the corresponding short code that is available in the piping specification. Leave this column blank if you want to map the component ItemCode directly to a tag number in the next column.

S3D Tag Number - Enter the tag number to map the component ItemCode. You must leave the short code column blank if you define a tag number.

Is Specifically Placed - Specify if the item is specifically placed (Y) or it implied by the route (N). Examples of specifically placed items (Y) are: valves, flange pairs (takedowns), end flanges, caps, ends, spectacle blinds, blind flanges. Examples of implied items (N) are: pipes, elbows, tees, other branch components, reducers, flanges around valves.

S3D Geometry Type - Enter the geometry type code.

Geometry Type	Code
PlainPipingOrTubingVariableLength	5
PlainPipingOrTubingFixedLength	10
LinearSymmetrical	15
ElbowFixedAngleIncludingAngleValves	20
ElbowTrimmable	25
ElbowSideOutlet	30
ElbowRadialOutlet	35
Return	40
ReturnBottomOutlet	45

ReturnSideOutlet	50
Pipebend	55
Miter	60
EccentricSizeChange	65
ConcentricSizeChange	70
TeeFullSizeIncluding3wayValves	75
TeeReducingBranch	80
TeeEccentricReducingBranch	85
TeeReducingRunAndBranch	90
TeeReducingRuns	95
TeeWithOffsetFullSize	100
TeeWithOffsetReducingBranch	105
TeeWithOffsetReducingRunAndBranch	110
TeeWithOffsetReducingRuns	115
TeeWithDoubleOffsetFullsize	120
TeeWithDoubleOffsetReducingBranch	125
TeeWithDoubleOffsetReducingRunAndBranch	130
TeeWithDoubleOffsetReducingRuns	135
TeeNonSymmetrical	140
CrossFullsizeIncluding4wayValves	145
CrossReducingBranches	150
CrossReducingRunAndOneBranch	155
CrossReducingRunAndTwoBranches	160
LateralFullsize	165
LateralReducingBranch	170
LateralReducingRunandBranch	175

LateralReducingRuns	180
OletTypeBranch	185
LatroletTypeBranch	190
NonradialBranch	195
EndoletTypeBranch	200
Elbolet	205
TrueYTypeBranch	210
DoubleYTypeBranch	215
ClosingIncludingInstrumentIndicatorsAndTransmitters	220
OrificeFlange	225
MultiportValve	230
Generic	500

Is Rotation Applicable - Enter Y if the component can be rotated.

Port # to use as S3D Location - Enter the port number which corresponds to the location of the component. Enter 0 if it is the origin.

See Also

Piping Translation Map (on page 86)

PMC-Specific-ItemCode-Map

The **PMC-Specific-ItemCode-Map** sheet is a specific overriding map per piping specifications (above the Generic map) between a given ItemCode (AABBCC code in PDS) to Smart 3D ShortCode / Tag.

This is only to be used if the piping specification has different short codes other than short codes provided in the **Generic-ItemCode-Map** sheet. For more information, see *Generic-ItemCode-Map* (on page 87).

Piping Material Class - Enter the piping specification (material class) name for which you want to define an override.

Component ItemCode - Enter the PDS commodity name to override. This commodity name must already be in the **Generic-ItemCode-Map** sheet.

S3D Short Code - Enter the corresponding short code that is available in the piping specification. Leave this column blank if you want to map the component ItemCode directly to a tag number in the next column.

S3D Tag Number - Enter the tag number to map the component ItemCode. You must leave the short code column blank if you define a tag number.

See Also

Piping Translation Map (on page 86)

Specialty-Map

The **Specialty-Map** sheet provides a map between PDS specialty ItemCodes to Smart 3D specialty tag numbers.

Specialty Component ItemCode - Enter the PDS specialty commodity name to map.

S3D Tag Number - Enter the Smart 3D tag number to map the component ItemCode.

S3D Geometry Type - Enter the geometry type code.

Geometry Type	Code
PlainPipingOrTubingVariableLength	5
PlainPipingOrTubingFixedLength	10
LinearSymmetrical	15
ElbowFixedAngleIncludingAngleValves	20
ElbowTrimmable	25
ElbowSideOutlet	30
ElbowRadialOutlet	35
Return	40
ReturnBottomOutlet	45
ReturnSideOutlet	50
Pipebend	55
Miter	60
EccentricSizeChange	65
ConcentricSizeChange	70
TeeFullSizeIncluding3wayValves	75
TeeReducingBranch	80
TeeEccentricReducingBranch	85
TeeReducingRunAndBranch	90
TeeReducingRuns	95

TeeWithOffsetFullSize	100
TeeWithOffsetReducingBranch	105
TeeWithOffsetReducingRunAndBranch	110
TeeWithOffsetReducingRuns	115
TeeWithDoubleOffsetFullsize	120
TeeWithDoubleOffsetReducingBranch	125
TeeWithDoubleOffsetReducingRunAndBranch	130
TeeWithDoubleOffsetReducingRuns	135
TeeNonSymmetrical	140
CrossFullsizeIncluding4wayValves	145
CrossReducingBranches	150
CrossReducingRunAndOneBranch	155
CrossReducingRunAndTwoBranches	160
LateralFullsize	165
LateralReducingBranch	170
LateralReducingRunandBranch	175
LateralReducingRuns	180
OletTypeBranch	185
LatroletTypeBranch	190
NonradialBranch	195
EndoletTypeBranch	200
Elbolet	205
TrueYTypeBranch	210
DoubleYTypeBranch	215
ClosingIncludingInstrumentIndicatorsAndTransmitters	220

OrificeFlange	225
MultiportValve	230
Generic	500

Is Rotation Applicable - Enter Y if the component can be rotated.

Port # to use as S3D Location - Enter the port number which corresponds to the location of the component. Enter 0 if it is the origin.

See Also

Piping Translation Map (on page 86)

Instrument-Map

The **Instrument-Map** sheet provides a map between PDS instrument ItemCodes to Smart 3D> instrument tag numbers.

Instrument ItemCode - Enter the PDS instrument Itemcode to map.

S3D Tag Number - Enter the Smart 3D tag number to map the instrument ItemCode.

S3D Geometry Type - Enter the geometry type code.

Geometry Type	Code
PlainPipingOrTubingVariableLength	5
PlainPipingOrTubingFixedLength	10
LinearSymmetrical	15
ElbowFixedAngleIncludingAngleValves	20
ElbowTrimmable	25
ElbowSideOutlet	30
ElbowRadialOutlet	35
Return	40
ReturnBottomOutlet	45
ReturnSideOutlet	50
Pipebend	55
Miter	60
EccentricSizeChange	65

EndoletTypeBranch	200
Elbolet	205
TrueYTypeBranch	210
DoubleYTypeBranch	215
ClosingIncludingInstrumentIndicatorsAndTransmitters	220
OrificeFlange	225
MultiportValve	230
Generic	500

Is Rotation Applicable - Enter Y if the component can be rotated.

Port # to use as S3D Location - Enter the port number which corresponds to the location of the component. Enter 0 if it is the origin.

See Also
Piping Translation Map (on page 86)

Support-Map

The **Support-Map** sheet provides a default map for all PDS supports to Smart 3D hanger and support assembly part number.

PDS Support - Enter the PDS support to map.

S3D Support Assembly Part Number - Enter the Smart 3D tag number to map the instrument ItemCode.

See Also
Piping Translation Map (on page 86)

Piping User Attribute Sheets

The user attribute sheets (the sheets with names that end with UA) map user attributes defined in the XML file to user attributes in the software.

Attribute Name in XML - Enter the attribute name in the XML file to map.

S3D Attribute Interface - Enter the Smart 3D user attribute interface name. You can find this information on the **CustomInterfaces** sheet of piping catalog workbook in column B, **InterfaceName**.

S3D Attribute Name - Enter the Smart 3D user attribute name. You can find this information on the **CustomInterfaces** sheet of piping catalog workbook in column D, **AttributeName**.

See Also
Piping Translation Map (on page 86)

APPENDIX B

Appendix: Automated Industry Commodity Code Creation

The piping specification translation utility requires pre-defined commodity code formats. The properties must be included in the sequence in which they are defined in the [*Product Folder*]\CatalogData\PDSTranslator\Bin\Industry Commodity Code Rule.xls workbook, although some properties in each format, for example Miscellaneous Requisition Classification, can be ignored unless that property is required to make the commodity code unique.

You can re-build commodity codes as the piping specifications are being translated, or after the specs have been translated. Use this feature to switch from the default PDS commodity code format to the default Smart 3D commodity code format when translating piping specifications from PDS.

The following describes the format of the industry commodity based on the following types of commodity codes:

Miscellaneous Fittings
Flanges
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Miscellaneous Fittings

This category includes flanged fittings, welded fittings, socket fittings, socket welded fittings, threaded fittings, tubing fittings, underground fittings, fire and safety components, and all other miscellaneous fittings.

Miscellaneous fittings are determined by the Piping Component Class property having a value equal to the numeric equivalent of ‘End fittings’, ‘Direction change fittings’, ‘Branch fittings’, or ‘Fire and safety fittings’ or by the Piping Component Subclass property having a value equal to the numeric equivalent of ‘Blinds’, ‘Stub ends’, ‘Coupling and connectors’, ‘Adapters’, ‘Unions’, ‘In-line spacers’, ‘Orifice spacers’, ‘Tapered spacers’, ‘Concentric diameter change’, or ‘Eccentric diameter change’.

1-3 Piping Component Type (first character is 'M')
4-5 Pressure Rating
6-7 End Preparation
8-9 Surface Preparation or Lining Material
10-12 Geometric Industry Standard or Manufacturer

13-15 Materials Industry Standard and Grade
16-17 Miscellaneous Fitting Requisition Classification
18-19 Industry Practice

If the miscellaneous fitting is lined, that is, the value of the Lining Requirement property is not equal to the numeric equivalent of ‘Undefined’, then the Lining Material property is used to form the 8th and 9th characters of the industry commodity code. Otherwise, the Surface Preparation property is used.

Flanges

Flanges are determined by the Piping Component Subclass property having a value equal to the numeric equivalent of ‘Flanges’, ‘Slip-on flanges’, ‘Plate flanges’, ‘Lap joint flanges’, ‘Reducing flanges’, ‘Slip-on reducing flanges’, ‘Plate reducing flanges’, ‘Expander flanges’, or ‘Orifice flanges’.

1-3 Piping Component Type (first character is 'F')
4-5 Pressure Rating
6-7 End Preparation
8-9 Flange Face Surface or Lining Material
10-12 Geometric Industry Standard or Manufacturer
13-15 Materials Industry Standard and Grade
16-17 Flange Requisition Classification
18-19 Industry Practice

If the flange is lined, that is, the value of the Lining Requirement property is not equal to the numeric equivalent of ‘Undefined’, then the Lining Material property is used to form the 8th and 9th characters of the industry commodity code. Otherwise, the Flange Face Surface Finish property is used.

Valves

Valves are determined by the Piping Component Class property having a value equal to the numeric equivalent of ‘Valves’.

1-3 Piping Component Type (first character is 'V')
4-5 Pressure Rating
6-7 End Preparation
8-9 Valve Trim Material
10-12 Valve Manufacturer and Model Number or Geometric Industry Standard
13-15 Materials Industry Standard and Grade
16-17 Valve Requisition Classification
18-19 Lining Material
20-21 Industry Practice

If the valve has a model number, that is, the value of the Valve Manufacturer and Model Number property is not equal to the numeric equivalent of ‘Undefined’, then the Valve Manufacturer and Model Number property is used to form the 10th, 11th, and 12th characters of the industry commodity code. Otherwise, the Geometric Industry Standard property is used.

Pipe Stock and Nipples

Pipe Stock and Nipples are determined by the Piping Component Subclass property having a value equal to the numeric equivalent of ‘Piping, variable length’, ‘Piping, fixed length’, ‘Distance pieces’, or ‘Nipples’.

1-3 Piping Component Type (first character is 'P')
4-5 Pressure Rating
6-7 End Preparation
8-9 Surface Preparation or Lining Material
10-12 Geometric Industry Standard or Manufacturer
13-15 Materials Industry Standard and Grade
16-17 Manufacturing Method
18-19 Nipple Length or Purchase Length
20-21 Industry Practice

If the pipe stock is lined, that is, the value of the Lining Requirement property is not equal to the numeric equivalent of ‘Undefined’, then the Lining Material property is used to form the 8th and 9th characters of the industry commodity code. Otherwise, the Surface Preparation property is used.

Tubing and Hose

Tubing and Hose is determined by the Piping Component Subclass property having a value equal to the numeric equivalent of ‘Tubing’ or ‘Hose’.

1-3 Piping Component Type (first character is 'T')
4-5 Pressure Rating
6-7 End Preparation
8-9 Surface Preparation or Lining Material
10-12 Geometric Industry Standard or Manufacturer
13-15 Materials Industry Standard and Grade
16-17 Tubing and Hose Requisition Classification
18-19 Industry Practice

If the tubing is lined, that is, the value of the Lining Requirement property is not equal to the numeric equivalent of ‘Undefined’, then the Lining Material property is used to form the 8th and 9th characters of the industry commodity code. Otherwise, the Surface Preparation property is used.

Gaskets

Gaskets are determined on the basis of existence in the gasket part data.

1-2 Gasket Type (first character is 'G')
3-4 Pressure Rating
5-6 Gasket Thickness
7-9 Gasket Manufacturer and Style Number or Gasket Industry Standard
10-12 Materials Industry Standard and Grade
13 Flange Facing
14-15 Industry Practice

If the gasket has a style number, that is, the value of the Gasket Style Number property is not equal to the numeric equivalent of ‘Undefined’, then the Gasket Manufacturer and Style Number properties is used to form the 7th, 8th, and 9th characters of the industry commodity code. Otherwise, the Gasket Industry Standard property is used.

Stud Bolts, Machine Bolts, Cap Screws, and Jack Screws

Stud Bolts, Machine Bolts, Cap Screws, and Jack Screws are determined on the basis of existence in the bolt part data.

1-2 Bolt Type (first character is 'B')
3-4 Bolt Set Quantity
5-6 Bolt Diameter
7-8 Bolt Length
9-10 Bolt Thread Pitch
11-13 Bolting Geometric Industry Standard or Manufacturer
14-16 Bolting Materials Industry Standard and Grade
17-18 Bolt Coating
19-20 Industry Practice

Nuts

Nuts are determined on the basis of existence in the nut part data. Note that the nut height will not be explicitly included in the commodity code format for nuts. It is assumed that the nut type, the nominal bolt diameter, and the industry standard.

1-2 Nut Type (first character is 'N')
3-4 Nut Set Quantity
5-6 Bolt Diameter
7-9 Geometric Industry Standard or Manufacturer
10-12 Materials Industry Standard and Grade
13-14 Nut Coating Type
15-16 Industry Practice

Washers

Washers are determined on the basis of existence in the washer part data.

1-2 Washer Type (first character is 'W')
3-4 Washer Set Quantity
5-6 Bolt Diameter
7-8 Washer Thickness
9-11 Geometric Industry Standard or Manufacturer
12-14 Materials Industry Standard and Grade
15-16 Washer Coating Type
17-18 Industry Practice

Miscellaneous Parts

Miscellaneous Parts are determined by the Piping Component Class property having a value equal to the numeric equivalent of ‘Accessories’.

1-3 Piping Component Type (first character is 'A')
4-5 Pressure Rating
6-7 Valve Manufacturer and Model Number
8-10 Geometric Industry Standard or Manufacturer
11-13 Materials Industry Standard and Grade
14-15 Miscellaneous Part Requisition Classification
16-17 Industry Practice

Note that jack screws may be defined as reportable piping commodities. In such cases, jack screws are determined by the Piping Component Class property having a value equal to the numeric equivalent of ‘Accessories’, and by the Piping Component Subclass property having a value equal to the numeric equivalent of ‘Miscellaneous Bolting’.

Stock Piping Specialties

Stock piping specialties are determined by the Piping Component Subclass property having a value equal to the numeric equivalent of ‘Relief devices’, ‘Flame arresters’, ‘Noise control devices’, ‘Pressure attenuation devices’, ‘Exhaust heads’, ‘Vents’, ‘Expansion joints’, ‘Swivel joints’, ‘Sampling devices’, ‘Strainers’, ‘Filters’, or ‘Steam traps’.

Note that some stock piping specialties, for example, valves, will have the industry commodity code based on a different, more appropriate, format.

1-3 Piping Component Type (first character is 'S')
4-5 Pressure Rating
6-7 End Preparation
8-9 Surface Preparation or Lining Material
10-12 Geometric Industry Standard or Manufacturer
13-15 Materials Industry Standard and Grade
16-17 Piping Specialty Requisition Classification
18-19 Industry Practice

If the stock piping specialty is lined, that is, the value of the Lining Requirement property is not equal to the numeric equivalent of ‘Undefined’, then the Lining Material property is used to form the 8th and 9th characters of the industry commodity code. Otherwise, the Surface Preparation property is used.

Stock Instruments

Stock instruments are determined by the Piping Component Subclass property having a value equal to the numeric equivalent of ‘Orifice plates’, ‘In-line instruments’, ‘In-line instruments, flow directional’, ‘Regulators’, ‘Instrument indicators’, ‘Instrument transmitters and process-connected switches’, ‘Other instrument end fittings’, ‘Switches and relays’, ‘Recorders’, ‘Analyzers’, ‘Other Sensors’ or ‘Miscellaneous Off- line Instruments’.

Some stock piping specialties, for example, valves, have the industry commodity code based on a different, more appropriate, format.

1-3 Piping Component Type (first character is 'I')
4-5 Pressure Rating
6-7 End Preparation
8-9 Surface Preparation or Lining Material
10-12 Geometric Industry Standard or Manufacturer
13-15 Materials Industry Standard and Grade
16-17 Instrument Requisition Classification
18-19 Industry Practice

If the stock instrument is lined, that is, the value of the Lining Requirement property is not equal to the numeric equivalent of ‘Undefined’, then the Lining Material property is used to form the 8th and 9th characters of the industry commodity code. Otherwise, the Surface Preparation property is used.

Off-line Instruments

Off-line instruments are determined by the Piping Component Class property having a value equal to the numeric equivalent of ‘Off-line Instruments’.

1-3 Piping Component Type (first character is 'O')
4-6 Manufacturer and Model Number

7-8 Instrument Requisition Classification
9-10 Industry Practice

Glossary

abstract part

A part that is only defined by a partial specification and that cannot be materially provided by the organization that defines the specification.

Active Template Library (ATL)

Set of class templates and wizards supplied with Microsoft C++ Version 5.0 and later. You can use an ATL when you create ActiveX controls and any other type of object that uses the Component Object Model (COM) model. Using an ATL is generally preferred over Microsoft Foundation Classes (MFC), because the implementations are smaller, easier to use, and more closely tied to the COM model.

angle

The circular measurement taken from the intersection of two pipes at a turn or branch.

approval state

Recorded state of acceptance of information contained in objects within the database. The approval states indicate a level of confidence in the information stored in the database and govern your ability to alter specific data about a product.

arrangement (accommodation)

Those components of a system arranged in three-dimensional space with accurate dimensional representation for installation. Various types include electrical, HVAC, machinery, outfitting, and piping.

attribute

A single type of non-graphics information that is stored about an object such as diameter or end preparation.

axis

An imaginary line used to define the orientation of a system or object normally defined in terms of an x-, y-, and z-axis. Some 3-D graphic objects have an associated axis used to define the center or axis for rotations.

basic design

Engineering definition of the model and its systems.

bill of material (BOM)

Hierarchical decomposition of a product into constituent assemblies and parts. Specific types of BOMs exist (for example, an EBOM is a bill of material from the point of view of an engineering department; an MBOM is a bill of material from the point of view of manufacturing).

bulkload

The process by which reference data in Microsoft Excel workbooks is loaded into the Catalog database.

catalog

Repository of information about components and materials used in construction. When you use catalog parts in the model, the software places an occurrence of the catalog part in the project. This occurrence is a copy of the actual catalog part.

Catalog database

The database that contains the reference data. Each model database can reference a different Catalog database.

chain

A set of continuous and tangent segments.

change history

Process of recording information such as who, when, and why for any given modification.

change management

Software features or manual procedures for managing the consequence of change. For example, software can support a change management feature to report drawings that need updating as a result of a change in a 3-D model.

change propagation

Ability of the software to intelligently modify dependent design information to reflect change in a higher order object.

class

Grouping of individual objects that share some very significant, common characteristics.

classification folder

A folder in the Catalog hierarchy that contains part classes. Classification folders are one level above part classes. The ClassNodeType and R-ClassNodeDescribes sheets in the Microsoft Excel workbooks define the classification folders.

codelist

A set of acceptable values for a particular property that can be referred to by an index number or selected in a combo box. For example, the codelist for the material specification allows you to select from a set of standard entries, such as ASTM A183-F316 Stainless Steel.

commodity code

A user-defined code that provides an index to parts in a catalog.

commodity item

A standard component found in a manufacturer catalog (an off-the-shelf component).

component

Physical part that a feature generates.

concurrent access

Ability of the software to allow multiple users to simultaneously access and modify the design of a model.

consolidated tasks

A collection of tasks run in batch. For example, the software allows you to extract a set of drawings immediately or to schedule the batch extraction for a future time.

constraints

A logical restriction that controls how part symbols ports relate to each other and to reference ports. There are four constraints: parallel, perpendicular, coincident, and distance.

contract

A Work Breakdown Structure object representing a scope of work, usually performed by an external supplier. The contract is related to a project and appears in the Work Breakdown Structure hierarchy.

coordinate

The location of a point along the X-, Y-, or Z-axis.

coordinate system

A geometric relation used to denote the location of points in the model. The most common coordinate system is the rectangular coordinate system, whereby points are located by traversing the X-, Y-, and Z-axes of the model. Normally, coordinate systems have their origin defined as 0,0,0.

cutting plane

A plane that cuts through an object.

damage records

Data relating to the damage and repair of structure or components that occurred during or after construction of a plant.

data interchange

Capability to output the design, or portions of the design, in a standard format for use or movement to another computer software system.

database

Repository for the product model data. The database contains information to describe individual objects in the data model and the relationships between objects as appropriate.

database backup

Process of recording a backup copy of the complete database or the incremental changes after the date that the last complete copy was created.

database break and recovery

Utilities used to restore a database after files are corrupted.

database copy

Functionality to copy large collections of model objects from one design project to another design project.

database management

Functionality related to managing a product model database.

database monitor record

Transactions that occur in order to provide database (DB) recovery after a stop in response with a minimum of lost data.

degree

The highest polynomial factor in the curve or surface mathematical definition. A line is a degree 1 curve, while a cubic B-spline is a degree 3 curve.

design alternative

Difference in a design represented by a separate version. A design alternative can be a new design prepared as a proposed change, or one of several elective options that the builder or customer selects. Each design alternative has an identification assigned so you can uniquely refer to the design alternatives.

design approval log

Record of review and approval of parts of the design.

design data auto input

Automation in loading existing design data into a new design database.

design documents

Drawings, sketches, material lists, procedures, and so forth that are generated during the design phase.

design object

Any object with properties that you can select. A design object can be related to one or more contracts of different types, but related only to one contract of a given type.

design progress check

Analysis of the content of the design to some metric unit that gives an idea of the degree of completion.

design review

Functionality to support rapid viewing of the design and markup of features with comments.

design service

Any general system services related to the design function.

design standard

Feature or object used in plant design that has been determined to the normal or approved way of accomplishing a design requirement. In the context of computer software, the term refers to computer functionality to support standards, not the standard itself.

detail schedule

Lowest level of schedule used to manage and track work progress.

distributed systems

Systems consisting of sequential parts with a distributive characteristic (for example, pipes distribute fluids, HVAC distributes air, cabling distributes power, and structure distributes loads).

distribution systems

Term synonymous and used interchangeably with the term distributed systems.

documentation

Drawings and other records that you must produce to document, obtain approval, or build the design.

drawing tool

Tool that helps in the process of creating, modifying, or manipulating objects. Examples are PinPoint and SmartSketch.

easting

A term that describes an east coordinate location in a coordinate system.

edge

A topological object that represents a trimmed curve bounded by a start and end vertex.

edge distance

The distance from the center of a bolt or rivet to the edge of a plate or flange.

equipment catalog

Catalog of equipment geometry and limited properties that the software uses to identify and visualize equipment and its placement in the model. The catalog is not the source for the total specification and ordering data for the object.

fabricate

To cut, punch, and sub-assemble members in the shop.

face-to-face

The overall length of a component from the inlet face to the outlet face.

fasteners

Bolts and rivets used to connect structural members.

element

Primitive geometric shape such as a line, circle, or arc.

fence

Boundary or barrier that separates or closes off an area. To surround or close like a fence.

field adjustment

Material added to the neat design geometry of piping or structural parts to allow for fit up in the case that extra material is required due to uncontrolled variance in the manufacturing and construction process.

flavor

A different variation of a symbol. Each variation has different occurrence property values.

focus of rotation

A point or line about which an object or view turns.

full penetration weld

A type of weld in which the weld material extends through the complete thickness of the components being joined.

function points

Part of the requirements documentation, function points are the smallest granularity of a requirement statement that describe specific detailed actions that the software performs.

functional block diagram

Schematic representation of a system (piping, electrical, ventilation) showing system parts and their relationship. You use symbols to represent equipment and components. A connecting network of lines illustrates their relationship. Taken together, the symbols and the network illustrate the function of the system.

furnishings

Parts such as movable articles and fittings that normally are not associated with a system (for example, a chair).

generic specific

Object that is parametrically defined or defined to suit a family of specific parts (for example, International Standards parametrics). For example, a 100 - 200 gpm pump in the catalog can provide a general shape to appear in the model until a specific object has been identified. See also specific and specific object.

GUIDs

Acronym that stands for Globally Unique Identifiers. The software automatically creates the GUIDs sheet in the Excel workbooks when you create the Catalog database and schema. The purpose of storing GUIDs within Excel workbooks is to help you keep track of what has been loaded into the database. Storing GUIDs also helps to avoid the situation in which a replacement Catalog database causes existing models to become invalid.

host location

The first location created for a Site. This host location is defined when the Database Wizard creates the Site database.

host server

The database server on which the Site database was created using the Database Wizard. Alternatively, if it is a restored database set, the Host Server is the database server where the Site database is restored. The Host Server in a Workshare environment contains the origin for the Site, Site Schema, Catalog, and Catalog Schema databases. Consequently, most Project Management and reference data work must take place at the Host.

initial design

Early stage of design work, generally before contract, used to estimate construction costs and provide a rough concept of the intended plant. Contains information relating to a plant created during its initial (concept) design period.

initial structural plan

Principal structural plan for the plant; also called a construction profile.

instantiation

Occurrence of a catalog object at a specific geometric location in the model.

interference checking

A process that identifies possible collisions or insufficient clearance between objects in the model.

job order

Industrial authorization for accomplishing work; synonymous with a work order.

kinematics analysis

Analysis of mechanical motion.

ksi

Kips per square inch.

leg length analysis

Preferred term is welding length analysis.

library

Resource of reference information that you can access in developing a plant design.

life cycle database

Information developed to assist in the maintenance and modernization of delivered plants.

link

Way to store information about another file in your document. You can update a link so that changes in the file appear in your document.

lintel

A horizontal member used to carry a wall over an opening.

load group

A grouping in which all components feature uniform load limits and stress safety characteristics. For example, if a pipe clamp from load group 5 has a maximum nominal load of 20kN, then so does a threaded rod from load group 5.

location

A Location is defined by three user-defined inputs: 1) a unique name, 2) a unique name rule ID, and 3) the server where the Site databases reside for that Location. A Location is defined and created when the Site database is created using the Database Wizard. Additional Locations can be created in the Project Management task. Each Location is a Site-level object, thus other Plants within the same Site collection can use the Locations when the Plants are configured for Workshare.

logical member

An object in the model used to represent the design topology.

machinery

Major pieces of equipment installed in a plant.

macro

A sequence of actions or commands that can be named and stored. When you run the macro, the software performs the actions or runs the commands. You can create the macros in Visual Basic or other OLE-aware programming applications. Some of the other OLE-aware programming applications are Visual Basic for Applications, Visual C++, and so forth.

maintenance envelope

A rectangular box around the part for clearance during maintenance operations.

maintenance records

Records of breakdown, repair, and overhaul of equipment.

material analysis

Analysis of a completed design work for extracting detailed material requirements; also called material lists.

material list

An option category that controls the format and content of the bill of materials.

methods

Objects in the database that describe the manufacturing methods to the component parts of a plant.

move from point

Starting point for an action. For example, when you move an equipment object, the Move From point determines the point of origin for the move.

move to point

Ending point for an action. For example, when you move an equipment object, the Move To point determines where you want the move to stop.

MTO neutral file

A non-graphic output file that can be fed into a material control system. MTO stands for Material Take-Off.

node

- One of the set of discrete points in a flow graph.
- A terminal of any branch of a network or a terminal common to two or more branches of a network.
- An end point of any branch or a network or graph, or a junction common to two or more branches.

northing

A term that describes a north coordinate location in a coordinate system.

nozzle

A piping connection point to a piece of equipment.

nozzle standout

The shortest allowable distance between the connection point of a nozzle and the start point of a turn on the leg connected to the nozzle.

NPD (Nominal Piping Diameter)

The diameter of a pipe.

object

A type of data other than the native graphic format of the application.

occurrence (of part or equipment)

Instantiation of a part of equipment in the model that refers to the part library; an instance of a specific object. The design can be built several times, and therefore the occurrence can apply to more than one hull. Typically, an occurrence points back to a specific object, either for its complete definition, as in the case of a particular valve, or for its made from material, as in the case of a steel plate part cut from sheets. Thus, when a designer selects a component from the catalog and places it at a location in the space of the plant, the software creates an occurrence of that object in the plant design.

occurrence property

A characteristic that applies to an individual object in the model. Occurrence properties are designated with 'oa:' in the reference data workbooks. You can view and modify occurrence properties on the Occurrence tab of the properties dialog boxes in the software. Depending on the object, some occurrence properties are read-only.

origin

In coordinate geometry, the point where the X-, Y-, and Z-axes intersect.

origin point

The point at which the coordinate system is placed, providing a full Cartesian coordinate system with positive and negative quadrants. Points are placed at coordinates relative to the origin point, represented by the X, Y, and Z values.

orthogonal

The characteristic of an element consisting completely of elements positioned at 90-degree angles. A square is an orthogonal element.

orthographic

A depiction of an object created by projecting its features onto a plane along lines perpendicular to the plane.

P&ID

Diagram that shows the topology, functional components, and special requirements of a piping system; generally represents the engineering design of the system.

package

Set of closely related classes. (UML)

painting

Computation of paint surface and recording of paint system requirements.

parameter

A property whose value determines the characteristics or behavior of something.

part class

A group of similar objects. You can define part classes in the Excel workbooks. A part class can have multiple parts. For example, a heat exchanger part class can contain heat exchangers with different dimensions.

part number

Unique identifier of a part.

PDS (Plant Design System)

A comprehensive, intelligent, computer-aided design and engineering application for the process, power, and marine industries. PDS consists of integrated 2-D and 3-D modules that correspond to engineering tasks in the design workflow.

PinPoint

Tool that allows you to place, move, and modify elements with precision, relative to a reference point.

principle of superposition

The principle that states that the stresses, strains, and displacements due to different forces can be combined. This principle is only valid for linear analysis.

Product Data Management (PDM) System

Software intended to manage both product data and documents associated to the product data. Functionality typically includes: object-based data modeling tools, user administration, business rules, and document management. Document management typically includes document editing or reviewing, document mark-up or redline, document storage, and full-text retrieval.

product structure

Hierarchical breakdown or decomposition of a product into constituent parts, volumes, or units. (For example, a bill of material is one possible type of product structure.)

production planning

Functionality associated with the work breakdown and sequence of the construction of a plant.

promotion

Process of associating approval state with a product version. A product version begins its existence at a working approval state. When the version is at some level of maturity, its approval state is elevated to a higher approval state (that is, promoted). Then, further changes must be carefully controlled and generally require the data set demoted to a working state. One or more promotions can occur successively higher approval states (between working and approved) to represent various intermediate levels of review or progressive approval.

query select sets

Set of objects that are selected in a query or queries on the database.

reference data

The data that is necessary to design plants or ships using the software. Reference data includes graphical information, such as symbols. It also contains tabular information, such as physical dimensions and piping specifications.

resource estimation

Rough estimate of material, manpower, and facility utilization for the design and construction of the plant.

route

1) A line connecting a series of points in space and constituting a proposed or traveled route. 2) The set of links and junctions joined in series to establish a connection.

satellite server

The database server where the replicated databases reside for Workshare. The Satellite Server is not used unless Workshare is activated.

schema

A database that creates the structure of another database. For example, a schema specifies the queries, tables, fields, and data types in a database.

schema update utility

Functionality used to assist in processing existing product models to an updated database structure after you modify or add to the database structure.

site

The top level in the Project Management hierarchy. A Site configuration may contain several Catalogs, each shared by multiple Plants.

site administrator

Person responsible for managing the standards and general parameters for a given plant site within a Site database.

site setup

Functionality associated with establishing a new plant site or hull for design development.

sketch and trace

User interface for rough definition of a required design feature that typically works in a 2-D mode.

specifications

Contracted requirements for the plant.

stud

A bolt, threaded on both ends, used to connect components.

suspended floor

A concrete floor system built above and off the ground.

symmetric node

Type of vertex on a curve. A curve with a symmetric node has the same curvature on each side of the node. A handle can be attached to a symmetric node for editing.

system

A conceptual design grouping that organizes parts in hierarchical relationships. A system represents a functional view of the model and includes information such as system name, type, properties, and design specifications for the objects assigned to the system.

tag number

User-specific, unique number assigned to an object (for example, CV-101 for a control valve, HE-2002 for a heat exchanger).

target point

The origin for coordinate measurements displayed by PinPoint. You can position the target point anywhere on the drawing sheet or view.

tolerant geometry

A type of ACIS geometry - either an edge or a vertex - that is outside the tolerance for ACIS and requires special handling.

trimmed surface

A surface whose boundary is fully or partially inside the "natural" geometric definition of the surface. Some or the entire control polygon extends outside the face boundary.

trunk

Feature that quickly reserves space for the distributive systems and other systems that have a path. Along the trunk are stations that define the cross section and identify part or system membership.

unit/module modeler

Facility of the system to structure collections of equipment and components into a single identifiable object.

user attributes

A customized property in the reference data. The Custom Interfaces sheets in the Excel workbooks define these properties. You can list the customized properties on the individual part class sheets.

version control

Ability of the system to manage multiple versions of a single part of the design. Version control should support conditional analysis and promotion status, as well as alternate design features among hulls within a plant site.

vertex

A topological object that represents a point in the three-dimensional model.

viewset

Set of objects (usually a subset of the entire database) that a view operation uses. Membership or lack of membership for any object in a viewset does not affect the actual stored representation of the object, but only its availability or desirability for viewing in the current scenario.

weight and CG analysis

Routines that compute the weight of commodity materials as configured in a given design (for example, plate and pipe) and determine total weight and center of gravity (CG) for a collection of material and equipment, as well as the complete plant.

welding

Weld requirements for joining materials. Welding length analysis is the calculation of required weld dimensions; also called leg length analysis.

wirebody

A topological object that represents a collection of edges jointed at their common endpoints.

wizard

Software routine attached to an application that provides guidance and expert help to you to complete one of the functionalities of the application.

work content

Estimation development of metrics from the database that relates to the work hour content of the various construction units.

work order

Plant authorization for completing work; synonymous with a job order.

working plane

The available 2-D plane of movement for endpoint selection.

workset

Set of objects (usually a subset of the entire database) used in an interactive change, add, or delete operation. Membership or lack of membership for any object in a workset does not necessarily affect the actual stored representation of an object. However, you can change or delete an object in a workset that also results in a change or deletion of the stored object. Similarly, when you add a new object (not currently stored) to a workset, the software also adds the object container.

workspace

Area that represents the portion of the model data needed to perform the intended task and includes the user modeling settings.

workspace document

Document into which you can extract a portion of the model data for a user task.

Workspace Explorer

Tree or list representation of objects in your workspace.

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